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**EDITORIAL:**

**RESEARCH CULTURE AND ROLE OF  
MEDICAL JOURNALS**

Medical writing apparently seems to be a difficult task for most of the clinicians. One reason being non existence of research culture in Pakistan. Most people contribute articles to medical journal because it is a mandatory requirement for their promotion. There is no formal training about medical writing at under graduate level. College of Physicians & Surgeons Pakistan has made it mandatory for both the supervisors and trainees, to under go workshops on medical writing and research methodology and biostatistics. This has brought a positive change and now clinicians and trainees are quite well versed with research proposal writing and how to conduct research.

The role of medical journals in this regard is very important. They act as portal through which the research work reaches to the people. Timely publication for most of the medical journals is an up hill task People hardly subscribe for these journals and this is the reason why running cost in terms of logistics including publication are not fulfilled. They then rely upon pharmaceutical industry for advertisement. Many journals charge for publishing the articles.

Journal of Surgery Pakistan has a very author friendly policy. Nothing is charged for publishing the articles. A check list is provided in each issue to facilitate submission of the manuscript. Authors are advised to read instructions for writing article as it decreases the chances of rejection. We now are in 12th year of publication. It is all possible because of contribution from our worthy authors and reviewers. We hope to see co-operation from them in future as well.

**PROF. ABDUL AZIZ  
EDITOR IN CHIEF**

# OESOPHAGEAL ATRESIA AND TRACHEO-OESOPHAGEAL FISTULA: AN EXPERIENCE FROM A DEVELOPING COUNTRY

ANWAR ARAIN, FARHAT MIRZA, JAMSHED AKHTAR, SOOFIA AHMED, IFTIKHAR AHMED JAN

## ABSTRACT

**Objective** To evaluate the various factors influencing the survival of neonates with oesophageal atresia with distal tracheo-oesophageal fistula (EA with TEF).

**Study Design** A descriptive case series.

## Place & Duration

**of study** Department of Paediatric Surgery, National Institute of Child Health, Karachi from January 2003 to December 2003.

## Patients and Methods

A descriptive case series spanned over one year was conducted at the Department of Paediatric Surgery, National Institute of Child Health, Karachi. The baby's condition was classified according to Waterston's classification. All patients who survived were discharged when they were stable and fit for nursing at home. A routine follow up was advised, initially monthly and later at greater intervals.

## Results

During one year period 45 patients of oesophageal atresia with distal tracheo-oesophageal fistula were managed. Among these twenty seven (60%) were male and eighteen (40%) female babies. The age at presentation ranged between 3 hours to 20 days with a median age 4 days. The weight at presentation ranged between 1.2 kg to 3.5 kg with a mean of  $2.3 \pm 0.5$ . According to Waterston classification nine (20%) of these were in group-A, twenty-four (53%) in group-B and twelve (27%) in group-C. Six (13%) died preoperatively. In nine patients circular myotomy was done due to long gap. Postoperatively five patients needed ventilatory support. Postoperative course was uneventful in fifteen patients. Twenty four (61%) patients developed minor and major complications. Postoperatively thirteen (28.8%) patients died. Cause of death was mainly sepsis. The over all mortality was 42.2%.

**Conclusions:** A high overall mortality is of concern but post operative survival of about 66.6% (overall 57.8%) is encouraging. Early referral seems to be an important preventable factor for which awareness program at primary health care level is to be stressed.

**KEY WORDS:-** Esophageal atresia, Survival, Developing country, Risk factors

## INTRODUCTION

Oesophageal atresia with distal tracheo-oesophageal is a

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common congenital oesophageal anomaly<sup>1</sup>. This anomaly was uniformly fatal throughout the world prior to 1940, when first survival after surgical repair was reported by Cameron Haight<sup>2</sup>. Now a days even successful thoracoscopic repair of oesophageal atresia with distal tracheo-oesophageal fistula has also been reported<sup>3</sup>. Survival of an extremely low birth weight (740 grams) with this anomaly is now possible<sup>4</sup>.

Although there has been a minimal change in surgical technique, but due to better anaesthetic techniques, availability of fine suture material and antibiotics, the advancement in pre and postoperative care, in addition to early diagnosis, a significant decline in the mortality rate has been reported in developed countries <sup>5</sup>.

In developing countries like Pakistan, the oesophageal atresia with tracheo-oesophageal fistula is still a challenge to paediatric surgeons as the mortality is high<sup>6</sup>. There are many factors responsible for this high mortality rate including prematurity, low birth weight, home deliveries conducted by traditional birth attendant who in most cases are not properly trained even for normal deliveries. The lack of antenatal diagnosis, lack of proper referral system, delayed presentation, lack of paediatric surgical and/or anaesthetic coverage and lack of awareness and in some cases non-recognition of the anomaly by the trained medical person, are also major co-morbid factors. The purpose of this study was to find out various factors that influence the survival of patients having oesophageal atresia with distal tracheo-oesophageal fistula in our set up.

#### PATIENTS AND METHODS

A descriptive case series spanned over one year (January 2003 to December 2003) was conducted at the Department of Paediatric Surgery, National Institute of Child Health, Karachi. All patients, of oesophageal atresia with distal tracheo-oesophageal fistula, were included. History of antenatal and postnatal events was recorded, particularly, the gestational age, place of birth, mode of delivery and age and weight at presentation. Detailed examination was carried out to exclude associated anomalies and pulmonary complications. The baby's condition was classified according to the Waterston's classification. All babies were subjected to various investigations. Standard care as described in literature was provided to these patients. Those who were judged fit to undergo anesthesia were subjected to surgery. Post operatively they were managed in surgical ICU. Outcome of surgery was recorded in terms of complications and survival or mortality. All data was entered into SPSS program version 8.0. Mean and standard deviations of various numerical data was calculated. Chi square test was applied for qualitative data to find out significance level (p value of less than 0.05 was considered significant). Confidence interval was also measured.

#### RESULTS

During one year period 45 patients of oesophageal atresia with distal tracheo-oesophageal fistula were managed. Among these twenty seven (60%) were males and eighteen (40%) females. The male to female ratio was 1.5:1. The age at presentation ranged between 3 hours to 20 days (table I). The weight at presentation is shown in (table II).

**Table I** Age at presentation

Patients age	No of patients (%)	Cumulative Percentage
< 24 hours	13 (28.89)	28.89
24-48 hours	06 (13.33)	42.22
48-72 hours	03 (6.66)	48.88
4 days to 7 days	18 (40)	88.88
8 - 20 days	05 (11.11)	100.00

Median age=4 days (Range 1-20 days)

**Table II** Weight at presentation

Patients weight	No of patients (%)	Cumulative Percentage
1 kg to 2 kg	14 (31.1)	31.1
2 to 2.5 kg	19 (42.2)	73.3
2.5 to 3.0 kg	09 (20)	93.3
More than 3 kg	03 (6.66)	100.00

Mean weight = (2.3 ± 0.5 SD) kg.

Median weight = 2.3 kg.

The linear regression analysis showed the relationship between weight at presentation and age at presentation as within normal range

Formula = Weight = 2.5-0.042 x Age

Only three (6.6%) patients were suspected antenatally of having oesophageal atresia. Thirty four (75.5%) patients were initially misdiagnosed and treated for pneumonia, birth asphyxia and sepsis. Twenty-two (48.9%) patients had history of birth asphyxia (table III). Twenty five (56%) patients had one or more associated anomalies. Cardiac anomalies were present in ten (40%) patients. (table IV).

According to Waterston's classification nine (20%) of these were in group-A, twenty-four (53%) in group-B and twelve (27%) in group-C. That is statistically significant with p-value 0.001 chi Square test=12.60.(table V)

Out of 45 patients, six (13%) died preoperatively, one of these patients was in Waterston group-B and five in group-C. (table VI). In remaining thirty nine (87%) patients, right-sided thoracotomy was performed. In one patient perforation of proximal oesophageal pouch found (probably the nasogastric tube was inserted with great strength). In this case cervical oesophagostomy and

**Table III Clinical presentation**

Symptoms	No. of patients (%)	95% CI*
H/o birth asphyxia	22 (48.8)	22.3-75.9
Drooling of saliva or frothing	41 (91.1)	65.7-99.4
Choking after feeding	37 (82.2)	54.2-96.7
H/o cyanotic spell	28 (62.2)	33.5-85.7
Cough	18 (40)	15.7-68.4
Abdominal distension	16 (35)	12.7-64.4

\*CI=Confidence Interval

**Table V Waterston's Classification**

Groups	No. of patients (%)	95% CI*
A	09 (20)	4.1-48.3
B	24 (53.3)	25.8-79.4
C	12 (26.7)	7.4-55.6
P=0.001		
Chi Square=12.60		

\*CI=Confidence Interval

**Table IV System distribution of associated anomalies**

Anomalies	No of patients %	95% CI*
1. Cardiovascular (n=25)	10/(40%)	10.1-76.8
a. Right sided aortic arch	4	
b. Ventricular septal defect	3	
c. Patent ductus arteriosus	2	
d. Tetralogy of Fallot	1	
2. Gastrointestinal (n=25)	5/(20%)	1.9-58.8
a. Imperforate anus	3	
b. Common cloaca	1	
c. Cleft Palate	1	
3. Genitourinary (n=25)	5/(20%)	1.9-58.8
a. Hypospadias	2	
b. Prepenile scrotum + Hypospadias	1	
c. Bilateral hydronephrosis	1	
d. Bilateral Undescended testis	1	
4. Skeletal (n=25)	3/(12%)	0.3-49.7
a. 13 pairs of ribs	1	
b. Hemivertebrae	1	
c. Bilateral TEV	1	
5. Others	2 (8%)	0.1-44.3
a. Subglottic stenosis	1	
b. Down's syndrome	1	

\*CI=Confidence Interval

**Table VI Data of six patients who died preoperatively**

S. No	Gestational age	Wt.	Age at presentation	Pneumonia	Associated anomalies	Waterston Classification	Cause of death
1	36 weeks	2 kg	2 days	- do -	Imp. Anus + Ri. UD Testis Prepenile scrotum + Hypospadias	C	Respiration failure Septicemia
2	34 weeks	2kg	6 days	- do -	-	C	Respiratory failure + Septicemia
3	32 weeks	1.2 kg	9 days	- do -	-	C	Very low birth weight Respiratory failure, Septicemia Renal failure
4	33 weeks	1.7 kg	13 days	- do -	PDA + B/L. Hydronephrosis	C	Cardiac failure
5	36 weeks	2.2 kg	2 days	- do -	TOF	C	Cardiac failure
6	36 weeks	2.5 kg	4 days	- do -	Sub epiglottic stenosis	B	ARDS Respiratory failure

gastrostomy was made. In rest of thirty-eight patients ligation of distal tracheo-oesophageal fistula and end-to-end oesophageal anastomosis were performed. In nine patients circular myotomy was done due to long gap between proximal and distal oesophageal segments. Trans-anastomotic stent and chest tube with under water seal drainage were placed in all cases.

Postoperatively five patients needed ventilatory support. Early nasogastric tube feeding was started from 1<sup>st</sup> postoperative day) in nineteen (50%) patients. Of these thirteen (68%) patients survived. In nineteen (50%) patients early nasogastric tube feeding could not be started. In this group thirteen (68%) patients survived.

Postoperative course was uneventful in fifteen patients (39%) and twenty four (61%) patients developed minor and major complications (table VII). Postoperatively thirteen patients died. Cause of death was mainly sepsis. Overall survival was 57.7% (n 26). The comparison of three groups (pre op death, post op deaths and those who survived) is given in table VIII.

**Table VII** Postoperative Complications

Complications	No. of patients (%) (n=24)	95% CI*
Pneumonia / Atelectasis	05 (20.8)	1.9-60.5
Empyema	04 (16.6)	1.0-56.1
Hypocalcaemic fits	01 (4.1)	
Wound infection	02 (8.3)	0.0-45.7
Anastomotic leak	8 (3.33)	6.5-72.1
1. Minor leak	05	
2. Major leak or disruption	03	

\*CI=Confidence Interval

**Table VIII** Comparison of Three groups

Factors	Preoperative death n-6	Postoperative death n-13	Survival n-26
Mean gestational age (weeks)	34.3 weeks	34.6 weeks	36 weeks
Mean age at presentation (days)	6 days	6.0 days	3 days
Mean weight (kg)	1.9 kg	2.0 kg	2.4 kg
Pneumonia	100%	76.9%	61.3%
Associated anomalies	66.6%	46%	38%
Waterston Classification			
Group-A	0	11.11%	88.88%
Group-B	4.16%	25%	70.8%
Group-C	41.6%	50%	8.33%
Outcome Death / Survival	13.33%	28.88%	57.7%
Postoperative early NG feeding	--	32%	68%
Delayed feeding	--	32%	68%

**DISCUSSION**

The steady improvement in the overall survival rate for oesophageal atresia during the past three decades has been attributed to early diagnosis and the technical advances both in the field of neonatal intensive care and in the field of anesthesiology. Associated anomalies are the main cause of death in developed countries. This lead to change in risk categories and new classification has been proposed by Spitz<sup>7</sup>. He also reviewed the latest trend related to EA and TEF from their own experience. But this does not reflect the world scenario. According to one study most articles in the leading surgical journals originate from a few developed countries. These are usually from United states, Europe, Japan and Australia. The authors suggested that both developing countries and medical journals need to take steps to bring change in this trend so that data from developing world is also adequately represented in the surgical literature<sup>8</sup>. We therefore are reporting our experience so that one sided view from advanced countries should not be taken as the true picture of this anomaly.

There are not many studies from developing countries on the subject. The western literature does not depict the true picture of the anomaly from developing countries where large number of patients are born with this anomaly. In our center during one year 45 patients were brought with EA with TEF which is a huge number when compared with other countries. The high rate of population growth is the main reason. In a retrospective study of 15 years duration from Saudi Arabia only 94 patients were of EA with TEF managed. Postoperative complications were similar to those from developed countries but overall operative mortality (30.8%) was high. This does not include pre operative deaths<sup>9</sup>. In a study from Nigeria out of 223 patients with congenital anomalies there were only 2 cases of EA<sup>10</sup>. In a study from neighboring country India during a 25-year period (1972-1996), 585 patients with esophageal atresia with or without tracheoesophageal fistula were treated For purpose of analysis the period was been divided into five phases, with a steady decline in overall mortality from 95.4% in phase 1 to 41% in phase V<sup>11</sup>.

Unfortunately in our set up, the mortality is still high but comparatively better than reported from other developing countries. Many factors are responsible for this including hypothermia, prematurity, low birth weight, pneumonia and associated life threatening anomalies. The successful treatment of this condition requires better awareness, neonatal intensive care with efficient nursing staff and elective ventilatory and nutritional support and proper investigations like echocardiography, ultrasound, blood gases etc. But due to financial constraints these facilities

are lacking at our institute. But in a country like Taiwan a high mortality has been reported in patients of EA with TEF. They managed about 1.5 patients per year (15 patients in 10 years). Out of this cohort 6 died and 2 late deaths have been reported as well<sup>12</sup>.

In our study forty cases of oesophageal atresia were delivered by the traditional birth attendant who in most cases are not trained even for performing normal delivery, and not in position to make a diagnosis. So these patients were brought to us very late. Most of them had serious complications like aspiration pneumonia and thus classified into high-risk group whereas they could have been probably low risk group had they been recognized and referred earlier.

Sixty percent patients were delivered in hospital under the expert medical supervision. But the fact is that only six (13.3%) patients were referred to us as a diagnosed case of oesophageal atresia. Most of these patients were misdiagnosed initially and treated for other conditions like aspiration pneumonia, neonatal jaundice, prematurity, sepsis etc. This incidence of delayed diagnosis and referral is near to same as reported in a locally published study.<sup>1</sup> The cause of misdiagnosis by doctors and trained medical personnel are the lack of awareness that oesophageal atresia is a common congenital condition in newborn babies, so they should not hesitate in passing a nasogastric tube to confirm the patency of oesophagus, on slightest doubt.

Only three (6.66%) patients of our series were suspected of having oesophageal atresia antenatally by ultrasound. This does not correlate with international literature where ultrasound were done in almost all pregnant women, and the suspected case of oesophageal atresia, is confirmed by magnetic resonance imaging<sup>13</sup>. Antenatal and early postnatal diagnoses avoid dreadful complications.

Among forty-five patients, only thirteen (29%) presented within first 24 hours of life. Therefore, we can well imagine the status of the respiratory system of these patients, where most of the saliva and feed trickled into the tracheo-bronchial tree. It is in conformation with that reported in another locally published study, where 78% patient presented late after 24 hours of birth<sup>6</sup>. It is also comparable with other series conducted in developing countries. In contrast, it is reported in international literature, that the early diagnosis is a major factor in significantly decreasing the mortality of patients having oesophageal atresia.<sup>14, 15</sup>

In this series twenty-five patients (55.5%) had associated congenital anomalies. The percentages of these associated anomalies were according to those reported in international literature<sup>5, 16, 17, 18</sup>. Although most of these

were not life threatening, but increase the stress on already sick patients. Saing H et al<sup>5</sup> in his study reported that 43% to 67% of patients of oesophageal atresia had congenital associated anomalies and if involvement of two or more systems occurs, then the mortality is significantly high.

Sharma AK et al<sup>11</sup> in his series of patients demonstrated that the delay in diagnosis, prematurity, low birth weight, sepsis, pulmonary complications including pneumonitis continue to contribute to low survival rate in developing countries. Yagyu et al<sup>19</sup> demonstrated in their series of 113 patients, that the respiratory distress syndrome and pneumonia appear to clearly reflect the prognosis and therapeutic problems in oesophageal atresia.

Postoperative complications in our study were slightly different from internationally published literature. The incidence of postoperative pneumonia, empyema thoracis and sepsis was high. Five patients had pneumonia postoperatively and two of them also developed atelectasis, and both died due to respiratory failure. The incidence of these complications is low in internationally reported series<sup>20</sup>.

Anastomotic leak occurred in eight patients. Out of these, three patients had major anastomotic disruption and these patients died due to mediastinitis and septicemia. Five patients had minor anastomotic leak that was managed conservatively. Most of the postoperative complications were managed easily and few patients needed intensive monitoring and ventilatory and nutritional support. Due to limited resources and poverty, these facilities are limited. Most of the death occurred during the peri-operative period and were probably due to respiratory failure. Later deaths, however, were due to sepsis.

## CONCLUSION

The future of neonates having oesophageal atresia with distal tracheo-oesophageal fistula is not bleak. Although the post operative complications have shown a decline, trend the high morbidity and mortality are due to lack of awareness among, untrained traditional birth attendants and medical personnel and improper antenatal screening program. The delay in diagnosis, prematurity, low birth weight, delayed arrival at surgical centers, sepsis, pulmonary complications including pneumonitis and inadequate nursing care, all contribute substantially to lower the survival rate. If due attention is given to proper antenatal screening and care, creating better awareness about the anomaly among the medical personal and traditional birth attendants and improve proper referral system, then the survival rate can be improved further.

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# COLD NODULE ON THYROID SCAN – USEFULNESS OF ULTRASOUND IN PREDICTION OF MALIGNANT BEHAVIOR

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## ABSTRACT

### Objective

To determine the usefulness of sonographic features in predicting the risk of malignancy in cases of a solitary cold nodule on Tc-99m thyroid scan.

**Study Design** It was an observational cohort study.

### Place & Duration

#### of study

The study was conducted at Atomic Energy Medical Centre and Surgical Unit 1, Jinnah Post Graduate Medical Centre from January 2005 –December 2006.

### Patients and Methods

Two hundred fifty patients were randomly selected with the suspicion of solitary thyroid nodule on physical examination. Of these only 103 patients had cold nodule on Tc-99m thyroid scan and underwent thyroid sonography, FNAC and elective surgery.

### Results

Out of 103 selected patients 70 (68%) were females, with the ratio of 1:3, within the age group of 17-60 years. Of these 16 (15%) patients were confirmed as having well differentiated carcinoma thyroid, while 7 (7.2%) patients colloid or hemorrhagic cysts, 23 (23.6%) follicular adenoma, 40 (41.2%) had multi-nodular goiter, 13 (13%) nodular goiter, 03 (3%) colloid goiter and 01 (1 %) nodular adenomatous hyperplasia. Sonographic features of thyroid nodule were quantified by scoring according to the echo texture, internal architecture, margins, calcification and vascularity.

### Conclusion:

Sonographic scoring can be used as an effective tool for the evaluation of malignancy in solitary thyroid nodule in addition to tests such as FNAC.

**KEY WORDS:-** Solitary cold nodule, Thyroid ultrasound, Thyroid cancer.

## INTRODUCTION

Thyroid nodule is a common clinical problem.<sup>1,2</sup> Population studies suggest that 3%- 8% of asymptomatic adults in iodine sufficient parts of the world have thyroid nodules.<sup>3,4,5</sup> As increasing numbers of patients undergo imaging studies for medical evaluation, more and more thyroid nodules are being detected. High resolution ultrasound can detect thyroid nodules in 19%-67% of randomly selected individuals with higher frequencies in women and elderly.<sup>6</sup>

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Over the last decade, there have been many advances in the diagnosis and therapy of thyroid nodules. However controversy still exists in many areas, including the most cost-effective approach in the diagnostic evaluation of a thyroid nodule, role of ultrasound, efficacy of fine needle aspiration and the extent of surgery to be performed. Thyroid scintigraphy is considered to be an initial diagnostic test even when the patient is biochemically euthyroid.<sup>7</sup>

A number of studies have assessed various sonographic characteristics as predictors of thyroid cancer. Sonographic features reported to be associated with an increased risk of malignancy include, nodule size more than 10 mm, presence of micro-calcifications,

hypoechoogenicity, solid composition, absence of a halo rim, vascularity and irregular margins.<sup>8</sup> Thyroid nodules are common, but thyroid cancer is rare malignancy. So, in common practice FNA of a thyroid nodule is the method of choice for determining the risk that a given nodule is malignant.<sup>9,10</sup>

In our facility we perform ultrasound of a large number of patients presenting with a cold nodule on Tc 99m thyroid scan and have routinely recommended FNA for all nodules larger than 10 mm size regardless of the sonographic appearance or the number of nodules. Cancer tends to be found more often in patients who have a solitary nodule on physical examination, although many patients, as many as two thirds in some studies, actually have multiple nodules when imaging or surgical procedures are done. Moreover, similar frequency of thyroid cancer has been reported among patients who have solitary or multiple nodules on palpation.<sup>9</sup>

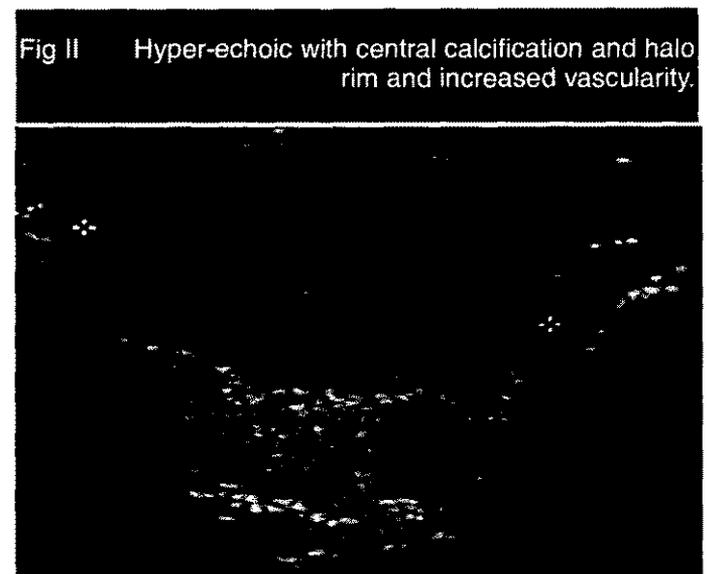
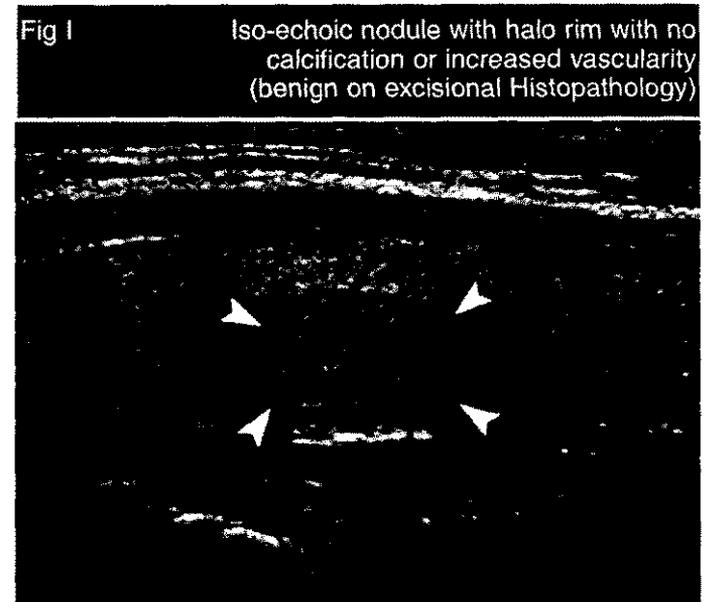
Management has changed in recent years, but important differences of opinion remain over which nodules should be surgically excised. This study describes a strategy for the management of clinically euthyroid patients who have a solitary thyroid nodule that prevents unnecessary testing while identifying the few patients who require therapy. Our goal was to determine the risk of thyroid cancer in patients with solitary cold nodule and to establish whether or not sonographic features of thyroid nodule can be useful in predicting the risk of malignancy in a given nodule.<sup>11</sup>

#### PATIENTS & METHODS

Two hundred fifty patients were referred to the Thyroid Out Patient Department at the Atomic Energy Medical Centre (AEMC) Jinnah Postgraduate Medical Centre (JPMC) Karachi) between January 2005 - December 2006 for evaluation of suspected thyroid nodular disease. The study included 205 female in the age group of 15 – 60 years while males were 45 in number (age: 20 – 45 years). The criteria for referral was suspicion of the presence of one or more thyroid nodules on physical examination or the presence of an "incidental" nodule discovered by an imaging technique such as computed tomography. All patients underwent thyroid scintigraphy (Siemens E-Cam) and sonography (Nemio 20) as part of their evaluation, and most of the patients with one or more thyroid nodules larger than 10 mm in diameter had FNA. All patients had normal levels of serum TSH detected by RIA lab of AEMC. (Normal Range: 0.17 -4.05 IU/ml). All those patients with solitary warm, hot or toxic nodules were excluded, as well as patients with evidence of sub-clinical hypothyroidism or hyperthyroidism.

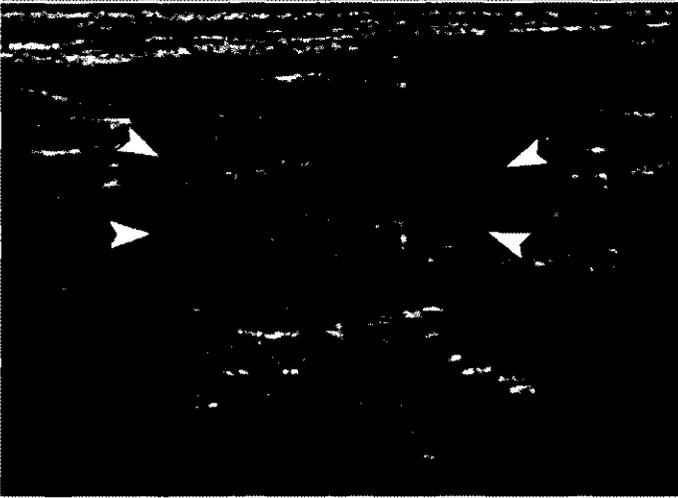
Ultrasonographic evaluation was done by two independent sonologists who looked for the following 7 characteristics: echo texture, internal architecture, margin,

presence of a halo rim, vascularity, and calcification pattern.<sup>12</sup> The echo texture of each lesion was classified as isoechoic (Fig I) hypoechoic or hyperechoic (Fig II) in comparison with the background thyroid tissue. The internal architecture was defined as solid, solid with cystic elements, or predominantly cystic. Predominantly cystic lesions (Fig III) were those containing cystic components that constituted more than 50% of the lesion.



Margins of lesions were categorized as well defined when clear demarcation with normal thyroid was noted around more than 50% of a nodule and were considered poorly defined when more than 50% of the border of the lesion was not clearly demarcated. Furthermore, the overall shape of the lesion (contour) was classified as either smooth and round or irregular with angulated edges. The presence of a complete or incomplete hypoechoic halo around each lesion was also documented, and the

**Fig III** Iso-echoic nodule with central cystic area, halo rim but no evidence of increased vascularity



**Fig IV** Increased peripheral and intra-nodular vascularity



predominating pattern of blood flow was classified as intrinsic to the lesion or perinodular.

Color Doppler flow seen within a lesion was defined as intrinsic (Fig IV) whereas flow noted along the immediate margins of the lesion was considered perinodular. The intrinsic flow pattern was further classified as hypervascular or hypovascular with respect to background thyroid tissue. Finally, calcifications were classified as micro-calcifications or coarse calcifications with or without peripheral distribution. Scoring of ultrasound findings were also done to quantify for further management. (Table I).

FNA was performed by consultant pathologist of the Basic Medical Science Institute, JPMC and Aga Khan University. Three to four aspirates were performed per nodule using a 25-gauge needle.<sup>13</sup>

Diagnostic aspiration was classified as follows: benign, atypical cells of undetermined significance or

**Table I** Ultrasound Scoring Scheme

1	Echo Texture	Cyst	0
		Hyper-echoic	1
		Hypo-echoic	2
		Iso-echoic	3
2	Internal Architecture	All Cystic	0
		Complex Cystic	1
		Complex Solid	2
		Solid	3
3	Calcification	No	0
		Yes	1
4	Blush	No/Perinodular	0
		Inter-Nodular	1
5	Margin	Well Defined	0
		Halo Rim	1
		Ill Defined	2

pleomorphism, suggestive of follicular neoplasm, suspicious for papillary carcinoma, or positive for papillary carcinoma.<sup>14,15</sup> Surgery was recommended for all nodules. All cases had hemi-thyroidectomy and the final diagnosis was based on histopathological examination of the entire gland.

## RESULTS

A total 250 patients were randomly selected with solitary palpable nodule, out of which 103 patients had a scintigraphically cold nodule with normal biochemistry. Seventy (68%) were females and 33 (32%) males with the ratio of 1:3, within the age group of 17-60 years. Of these 16 (15%) patients' histopathology on hemi-thyroidectomy was confirmed as well differentiated carcinoma thyroid, while 7 (7.2%) patients had colloid or hemorrhagic cysts, 23 (23.6%) follicular adenoma, 40 (41.2%) patients had multi-nodular goiter, 13 (13.39%) nodular goiter and 03 (3.09%) had colloid goiter. One patient had the histopathology of nodular adenomatous hyperplasia.

All 40 cases proven to be multinodular goiter on histopathology were evaluated sonographically and the characteristic of largest nodule was used for scoring. Follicular adenoma and multinodular goiter were the most common benign lesions in both genders while females had higher number of papillary carcinomas.

The various characteristics of ultrasound, namely echogenicity, internal structure, margins, calcification and vascularity when analyzed statistically (using chi-square), showed a definite trend with  $p < 0.05$ . When the individual ultrasound parameters were analyzed, on echogenicity an isoechoic pattern was associated with malignancy, while a hyper echoic lesion was almost always benign ( $p = 0.004$ ). Upon analyzing internal structure, predominantly solid lesions tend to be more indicative of malignancy ( $p < 0.01$ ), while an ill-defined margin was also indicative of malignant characteristic and a well defined margin was almost exclusively suggestive of benign etiology ( $p = 0.003$ ). Increased intra-nodular vascularity was also indicative of malignancy ( $P < 0.001$ ). Marginal calcification was suggestive of benign pathology, while central coarse calcification was often associated with malignant behaviour ( $p < 0.001$ ).

Employing the scoring as devised in Table I, it is observed that those cold nodules having a score of 6 or more, were highly suspicious of being malignant and should be considered for elective surgery, while if the score was 5 or less it can safely be labeled as likely to be benign and either a wait and watch approach or a limited surgery may be considered.

The combined scoring when compared with the findings of histopathology showed significant p value. For any set of sonographic characteristics, the likelihood of a nodule being malignant is approximately twice as high in a solitary nodule than in a non-solitary nodule in follicular carcinoma, while presence of two nodules on ultrasound in both cases of papillary carcinoma suggest the multiple foci in same lobe of thyroid gland.

## DISCUSSION

The analyses of 103 patients with one of more thyroid nodules evaluated by radionuclide scan and sonography demonstrate that the prediction of thyroid malignancy can be accomplished to some extent. The prevalence (15%) of thyroid cancer in our series of solitary nodule patients did not differ from other similar studies.

Most studies of sonographic features have been based on a subset of patients that were skewed towards those with the most suspicious nodule.<sup>16</sup> Other studies have been limited to univariate analyses that evaluate one

sonographic feature at a time. The results of our analyses are concordant with some findings of prior studies. Our findings reveal that predominately solid nodules, iso-echoic, and those with punctuate/coarse calcifications are more likely to be malignant than are nodules without these characteristics. These results are consistent with prior studies.<sup>17</sup> Our study of sonographic characteristics addresses most of these limitations; however a larger study is required to definitely prove the relationship between sonographic characteristics of a thyroid nodule and its likelihood of malignancy.

We also noted that a hypo-echoic nodule with a halo rim and marginal calcification has no prognostic significance. Whereas internal coarse calcifications double the risk of malignancy compared with a similar nodule without calcifications. While increased vascularity at the margins and centrally is also an important indicator of malignancy. Furthermore, all thyroid nodules were classified based on histopathological analyses. The rate of false negative results at cytology has been low when performed by reputable pathologist and unlikely to miss cancers. While other FNA performed by technologist and reported as pleomorphism on cytology remain inconclusive.

There is considerable variation among published literature for evaluation of thyroid nodules. In our set-up most physicians and surgeons prefer FNA followed by elective surgery. Other suggest routine aspiration of largest nodule. Using the results of our multivariate analysis of sonographic characteristics for any thyroid nodule seen on ultrasound, the likelihood of malignancy can be determined, based on its solid composition, presence of punctuate calcifications, intranodular vascularity and ill-defined margins. Our data also confirm that any single modality of radionuclide scan or ultrasound or FNA cannot be used to confidently exclude malignancy. So with the evaluation of thyroid nodule, a complete history and physical examination focusing on thyroid gland should be performed. A serum thyrotropin (TSH) should be obtained. Next a radionuclide thyroid scan should be done to document whether a nodule is "functioning" or "cold". Diagnostic thyroid ultrasound ought to be the imminent step followed by FNA<sup>18</sup>.

The basic idea is to augment the management plan for the surgeons prior to the surgery as for hemithyroidectomy in cases of nodular goiter or colloid cysts. Otherwise if sonographic criteria and FNA suggest malignancy then decision for near total thyroidectomy will definitely save the patient from undergoing two sets of surgery (hemithyroidectomy followed by total thyroidectomy).

A large number of palpable solitary thyroid nodule confirmed by radionuclide scan had multinodular goiter (41.2%) on histopathology. Its occurrence can be explained that radionuclide scan cannot detect nodules less than 10 mm in size as well as presence of two adjacently placed cold nodules appear as single entity on scan but very well delineate on ultrasonography. Cytology is the procedure of choice in these cases before elective surgery. If the cytology result shows benign pathology which also correlates with sonographic scoring < 5, then serial ultrasound be used in follow-up of thyroid nodules to detect clinically significant changes in their size.

### CONCLUSION

The univariate parameter of ultrasound features or FNAC or radionuclide scan showed no significant P value in the evaluation of solitary thyroid nodule. While multivariate parameters of ultrasound when scored and compared with radionuclide scan, FNAC and histopathology have significant p value ( $p < 0.005$ ) as mentioned in results. In future it may be helpful to narrow the actual outcome of thyroid nodule before major surgery.

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# ESTIMATION OF PERPENDICULAR DISTANCE FROM CUSPIDS AND PREFABRICATED ARCH WIRES IN ARCHES OF PATIENTS

AMBREEN AFZAL, SYED SHAHBAZ, MAHMOOD HAIDER

## ABSTRACT

### Objective

To estimate the perpendicular distance from cuspids and prefabricated arch wires in arches of patients using 3M MBT arch wire system.

**Study Design** Cross-sectional analytical

### Place & Duration

#### of study

Orthodontic department, Karachi Medical & Dental College. This study was of six months duration.

### Patients and Methods

Sampling technique was non-probable, purposive. Inclusion criteria was patients not orthodontically treated, having symmetric arches of adult dentition. Inter-molar width was described as cross arch distance between the mesiobuccal cusp tip points of the right and left 1st molars in millimeters while inter-canine width was cross arch distance between the buccal cusp tip points of the right and left cuspids in millimeters. After taking consent from the patient impressions of the maxillary and mandibular arches was taken with alginate. Ortho plaster was used for making the cast. Occlusal surface of the casts were scanned, with a ruler included for magnification error using HP scanner version 1200. Using Photoshop software program version 7 (Adobe System), the proximal contact between the two central incisors will be used as the origin of the X and Y coordinate. The landmarks were joined starting from one molar and ending on the other. This gave the arch form of the patient's arch.

The wires were superimposed on the scanned images maintaining the x and y coordinates. While each wire superimposed on the image touching at maximum number of teeth, the perpendicular distance between the canine cusp tip and the wire in horizontal axis was measured. The values obtained from both the sides are summed up and termed as difference in inter-canine width. All the three arch wires, that is, orthoform I, orthoform II and orthoform III were superimposed on the patients' arches.

### Results

Two hundred patients were included in our study out of which females were 138. all the three types of wires in maxillary arch, the Orthoform I wire, which is the tapered type showed the least mean value (1.99) with a S.D of 3.23. In the mandibular arch, the mean value for Orthoform I was calculated to be least (.63) with S.D of 2.12. However, the value for Orthoform III (.65) with S.D of 2.37 showed very little difference than Orthoform I. All the three types of arch wires used in this study affect the inter-canine distance.

### Conclusion:

The current preformed NiTi wires are too wide for many patients and should be modified when these patients are being treated.

### KEY WORDS:-

Inter-Canine width, Retention.

## INTRODUCTION

Arch wires are important part of modern appliances.<sup>1</sup> Similarly the dental arch form and width are important

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factors for determining the success and stability of orthodontic treatment.<sup>2</sup> The patient's original arch<sup>3</sup> form and inter-canine<sup>4</sup> width should be preserved during orthodontic treatment. This would replace the teeth in a position of maximum stability.

According to several authors, the stability of the form and dimension of the mandibular dental arcade are factors of

stability of the therapeutic results.<sup>5</sup> Long-term retention studies support the view that post treatment changes are greater when arch form is altered than when it is maintained.<sup>6</sup> Boone<sup>7</sup> has suggested that the individuality of a patient's arch form and dimensions must be recognized and respected if a successful treatment outcome is to be achieved. Many believe that arch form and size are unique for each individual and are principally controlled by the form of the basal bones initially and by the balance of energy imparted to the teeth in all planes of space.<sup>8</sup> Arch form and size should be recognized as part of a morphologic human pattern.<sup>9</sup> When teeth are aligned by orthodontic treatment, there is a documented tendency for a return toward the original pattern of malocclusion.<sup>10</sup> Steiner,<sup>11</sup> McCauley,<sup>12</sup> Strang,<sup>13</sup> Shapiro,<sup>14</sup> and others concluded that the mandibular intercanine and intermolar width dimensions show a strong tendency to relapse and should be considered inviolate. Walter,<sup>15</sup> however, reported that these dimensions could be successfully increased. Reports concerning changes of arch width dimension since 1948 up to the present are varying from "arch width decrease to a pretreatment value" to "lower than the pretreatment dimension."<sup>16</sup>

Therefore, it is important in the leveling and alignment stage to select the shape that most closely matches the patient's pretreatment arch form, according to both his and her ethnicity and type of malocclusion.

## PATIENTS & METHODS

This research work was conducted in the department of orthodontics at Karachi medical and dental college, Karachi. The study was completed in 6 months. This was a Cross-sectional analytical study. Two hundred patients were included in our study out of which females were 138. Sampling technique was non-probable, purposive. Inclusion criteria was patients not orthodontically treated, having symmetric arches of adult dentition. Patients of either sex with age ranging between 14 years and 25 years were the subjects. Patients exhibiting incisal or cuspal attrition, fractures of teeth or ectopically erupted teeth, those with mixed dentition and anomalies of tooth size e.g. microdontia, macrodontia, peg laterals etc. and with anomalies of tooth number e.g. hyperdontia, hypodontia were excluded.

Inter-molar width was described as cross arch distance between the mesiobuccal cusp tip points of the right and left 1<sup>st</sup> molars in millimeters while inter-canine width was cross arch distance between the buccal cusp tip points of the right and left cuspids in millimeters. All patients were taken from orthodontic OPD of Karachi Medical and Dental College Hospital. After taking consent from the patient impressions of the maxillary and mandibular arches was taken with alginate.

Ortho plaster was used for making the cast. On the maxillary and mandibular dental casts, the following landmarks were marked with a black pencil: the midpoint of the incisal edges of the central incisors; the midpoint of the incisal edges of the lateral incisors; buccal cusp tips of the canines; buccal cusp tips of the first premolars; buccal cusp tips of the second premolars; and mesiobuccal cusp tips of the first molars.

Occlusal surface of the casts were scanned, with a ruler included for magnification error using HP scanner version 1200. Using Photoshop software program version 7 (Adobe System), the proximal contact between the two central incisors will be used as the origin of the X and Y coordinate. The landmarks were joined starting from one molar and ending on the other. This gave the arch form of the patient's arch.

MBT™ system includes three different types of prefabricated arch wires. These are Tapered Arch Form (OrthoForm I), Modified Square Arch Form (OrthoForm II), Ovoid Arch Form (OrthoForm III). MBT™ arch wires of three different shapes were also scanned maintaining the resolution of the scanner again with a scale. The wires were superimposed on the scanned images maintaining the x and y coordinates. While each wire superimposed on the image touching at maximum number of teeth, the perpendicular distance between the canine cusp tip and the wire in horizontal axis was measured. The values obtained from both the sides are summed up and termed as difference in inter-canine width. All the three arch wires, that is, orthoform I, orthoform II and orthoform III were superimposed on the patients' arches.

Data was analyzed by using SPSS version 10 on computer. Frequency and percentage were computed for presentation of types of arch form, sex etc. Quantitative response like difference of inter-canine width etc. are presented by mean± standard deviation. Student's t-test applied to test the hypothesis at p<0.05 level of significance. Chi-square test of proportions was used to compare the proportions of types of arch form.

## RESULTS

Correlation between the prefabricated arch wires and patients' dental arch forms was identified on 200 cases. Both upper and lower dental arches were included in the study.

Table I shows the comparison of different arch wires of MBT™ system. If we compare all the three types of wires in maxillary arch, the Orthoform I wire, which is the tapered type showed the least mean value (1.99) with a S.D of 3.23. According to this, we can conclude that among all the three different wires, Orthoform I wire (tapered) in the maxillary arch will least affect the inter-canine distance of the patients' arches.

**Table I** Comparison of upper and lower arch measurements.

Type of arch wire	Upper arch		Lower arch		P-Value
	Mean	S.D	Mean	S.D	
I	1.99	3.23	0.63	2.12	0.001
II	6.38	3.59	3.05	2.74	0.001
III	2.94	3.56	0.65	2.37	0.001

Paired t test was used to calculate the P-values.

In the mandibular arch, the mean value for Orthoform I was calculated to be least (.63) with S.D of 2.12. However, the value for Orthoform III (.65) with S.D of 2.37 showed very little difference than Orthoform I. We can conclude that Orthoform I (tapered) will least alter the patients' inter-canine width. Orthoform II (modified square) with the mean value (6.38) S.D 3.59 in maxilla and in mandible (3.05) S.D 2.74, shows a greater tendency of altering the inter-canine width.

## DISCUSSION

With the advent of nickel-titanium highly elastic preformed arch wires, the clinician often fails to recognize a particular patient's uniqueness of arch form and size, because of the great and confusing variability in arch form classification encountered in clinical practice. The present study followed OrthoForm methodology by classifying dental arches into Tapered Arch Form(Orthoform I), Modified Square Arch Form( Orthoform II) and Ovoid Arch Form(Orthoform III) to determine the frequency distribution of the 3 arch forms for our sample.

We can conclude that among all the three different wires, Orthoform I wire (tapered) in the maxillary arch will least affect the inter-canine distance. While for the mandibular arch, we can conclude that Orthoform I (tapered) will least alter the patients' inter-canine width. The sample for our study was collected at Karachi Medical and Dental College Hospital in Karachi; patients were from different ethnic groups which included mainly Indian originated (Urdu speaking), and small proportion of other ethnic groups, such as Punjabi, Pathan, Sindhi and Balauchi, so in future similar studies are required on a larger scale to evaluate all of the available archwire brands wire in our population.

The dentists in our country use arch wires of different brands for treating the patients with out knowing which arch wire form is best for that patient. It is very important that the Orthodontists and general dental practitioners of our country must utilize the arch wire which least affect the patients' inter-canine width, irrespective of any brand.

## CONCLUSIONS

1. All the three types of arch wires used in this study, will affect the inter-canine distance
2. For maxillary arch, Tapered arch form was found best fit in more samples than the other types
3. In mandibular arch, Tapered and Ovoid arch form is more prevalent.
4. When treating Pakistani patients, one should expect to use tapered arch forms in a significant percentage of patients. The current preformed NiTi wires are too wide for many patients and should be modified when these patients are being treated.

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# MANAGEMENT OF FAECAL FISTULA

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## ABSTRACT

**Objective** To share our experience of management of faecal fistula so as to establish management protocol.

**Study Design** A descriptive study

## Place & Duration

**of study** Department of surgery ward-2 of Jinnah Postgraduate Medical Center Karachi, from July 2002 to June 2005.

## Patients and Methods

Twenty seven patients with a diagnosis of faecal fistula were studied. Demographic variables cause and outcome were observed and recorded. A three staged strategy was employed in the management. Conservative management of fistula was based on TPN and bowel rest

## Results

There were 16 males and 11 females. Mean age was 36 years. Small bowel was the commonest site of fistulation (22) and intestinal tuberculosis was the most common cause. Eighteen were high output fistulas and 9 were of low output. One fistula was complex others were simple. Sixteen responded to the conservative management and their fistulae closed spontaneously, Eleven of them had small bowel fistulas with high output, 5 had large bowel fistulas with low output.

Six patients underwent surgery after 4 weeks of conservative management. All had small bowel fistulas with high output. In 2 patients definitive surgery was done in the form of repair of intestinal leak and by-pass of obstructed segment. In 2 cases laparotomy and peritoneal lavage was done. Primary repair was done in 2 patients for high output fistula but lead to anastomotic leak. They were re-explored and exteriorization of loop was done but both died due to sepsis. Two patients underwent surgery after 6 weeks of conservative management 1 due to peritonitis secondary to anastomotic leak and exteriorization of loop was done and other operated for intra-abdominal collection. One patient was operated after 10 weeks of conservative management but deteriorated despite of all measures. There were five deaths 3 after surgery and 2 without any intervention, both of them were outside referrals.

**Conclusion:** The outcome of faecal fistula depends on a host of factors. We recommend proper timing of intervention for a good outcome.

**KEY WORDS:-** Faecal fistula, Total parenteral nutrition (TPN), Anastomotic leak

## INTRODUCTION

Enterocutaneous fistula is a common problem presenting to a postgraduate teaching hospital. It is a dreaded complication of gastrointestinal diseases and its

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surgery.<sup>1,2</sup> Postoperative enterocutaneous fistula may result from anastomotic failure, poor blood supply or iatrogenic injury.<sup>3</sup> As a rule the more proximal the fistula in the digestive tract, the greater the output will be.<sup>4</sup> High output enterocutaneous fistulas are more likely to be associated with malnutrition, sepsis, fluid and electrolyte disturbance and a lower incidence of spontaneous closure.<sup>5</sup>

Traditional therapy for uncomplicated enterocutaneous

fistula consists of a determination of fistula etiology, bowel rest, antibiotics, I/V fluids and nutritional support.<sup>6,7</sup> Successful operative closure is much more likely when sepsis is controlled and the patient's nutritional status is improved.<sup>8</sup> With implementation of these protocols reported mortality rates have improved significantly from 65% to 20%.<sup>9,10</sup>

This study was a retrospective review of enterocutaneous fistula undertaken to evaluate current management and outcome.

## PATIENTS & METHODS

This study included 27 patients of enterocutaneous fistula who were referred to or underwent surgery in ward-2 JPMC Karachi from July 2002 -June 2005. Patients with enteroenteric, enterovesical, enterovaginal or peristomal fistula were excluded. Fistulae were classified with regard to anatomical site, output (high output was defined as a loss of at least 500ml/24hours) and complexity (complex fistulas involved multiple bowel loops or abscess).

Patients were managed by multidisciplinary team comprising of a surgeon, anesthetist, nursing staff, dietician and stoma therapist. Patients were first stabilized by electrolyte repletion, correction of anemia and rehydration. A record was kept of fistula, urine, stomal or faecal output. If the combined fistula and stomal output was high then patient was kept nil per oral and attempt was made to reduce the output with proton pump inhibitors. A trial of octreotide was given for a week, but discontinued if there was no reduction in output. Total parenteral nutrition was calculated and administered if output remained uncontrollably high.

Sources of sepsis were identified using appropriate radiological investigations including ultrasound and C.T scan. Cultures of sites of potential infection were done and sepsis was treated promptly. Intra-abdominal collections were drained by early surgery and radiological interventions. Skin protection was achieved by application of zinc oxide paste or stomadhesive and wound drainage bags allowing concomitant drainage and measurement of effluent as well as improving patients mobility and comfort.

Once patient was stabilized contrast studies were carried out per orally per rectally or in the form of fistulogram for defining anatomy, complexity and to determine distal obstruction if present. Daily progress of the patients was assessed in terms of general condition and output of fistula. Surgical procedures included abscess drainage and peritoneal lavage in case of peritonitis, in absence of frank peritonitis resection and anastomosis of diseased bowel and an obstructed segment bypassed. Exteriorization of bowel was done in patients whose general condition precluded healing.

## RESULTS

There were 27 patients with median age of 36 years (range 18-52 years). Sixteen were males, 3 were hypertensive and 1 diabetic. Outside referrals accounted for 16 patients, remaining occurred in our ward. Three cases occurred spontaneously, one following radiotherapy and 2 had inflammatory bowel disease. Fistulas resulted from surgery in 24 of 27 patients. Out of 24, 19 surgeries were done in emergency for peritonitis secondary to tuberculous perforations (8), typhoid perforations (4) and fire arm injuries (2). Five patients developed fistula after emergency C-section. Two patients developed fistula after elective right hemicolectomy done for carcinoma of ascending colon and caecum.

Sixteen were anastomotic leaks and 8 were iatrogenic perforations. One fistula was complex the remaining were simple. There were 18 high output and 4 low output fistulas. The small intestine was the most common site for fistulation (22 out of 27). Total parenteral nutrition was given to 18 patients for a variable period of time (mean-4 weeks) that had high output fistula and their energy requirement was calculated by their weight and body mass index.

Surgery was carried out in the remaining 9 patients. After 4 weeks of conservative management 6 patients were explored. In 2 patients definitive surgery was done in the form of simple closure with proximal bypass. In 2 cases laparotomy and peritoneal lavage was done for intra abdominal collection. Primary repair was done in 2 patients for high output fistula but lead to anastomotic leak. These were re explored and exteriorization of the loop was done. Both patients expired due to sepsis and multiorgan failure.

After 6 weeks of conservative management 2 patients were explored one for peritonitis secondary to anastomotic leak, exteriorization of loop and definitive surgery was delayed for six weeks. In the other patient peritoneal lavage was done for intra abdominal collection. After 10 weeks 1 patient was operated and peritoneal lavage was done but deteriorated despite all measures and died (table I).

Table I Outcome Following Surgery.

1) After 4 weeks	6 patients	
□	Repair & bypass of obstructed segment	2
□	Peritoneal lavage	2
□	Primary repair/anastomotic leak/ileostomy died	2
■	After 6 weeks	2 patients
a	Exteriorization of loop closure after 6 weeks	1
b	Peritoneal lavage	1
i.	After 10 weeks	1 patient
1.	Peritoneal lavage died	1

\*Sixteen fistulae closed spontaneously, two patients not operated.

Fistula related complications accounted for an overall mortality of 18% (5 of 27), all were due to sepsis. Skin excoriation occurred in 6 patients despite application of zinc oxide paste and drainage bags. Five patients died 3 after surgical intervention and 2 patients died without intervention both referred from other units.

## DISCUSSION

Enterocutaneous fistula presents a challenge to the combined surgical and medical team. Morbidity and mortality associated with fistulae are still considerable and the current treatment even if successful may require prolong hospitalization.<sup>10</sup> Death related to enterocutaneous fistula remains disproportionately high compared with that associated with other surgical conditions.<sup>11</sup> Studies over the past 30 years have shown mortality rates of 5-41%.<sup>5, 8, 11-15</sup> Sepsis was the leading cause of death in all of these studies. Increased mortality has been shown to be associated with high initial fistula output and the presence of complications.<sup>16</sup> The mortality rate of this series of patients was significantly lower than previously reported studies. The improved outcome can be attributed to the early recognition and control of sepsis, management of fluid electrolyte imbalances, and meticulous wound care.

Early and aggressive treatment of sepsis is very important as illustrated by the fact that in our series sepsis caused the death of two patients. Similarly adequate nutritional support is recognized as a key feature in reducing mortality rate associated with both conservative and operative management as it helps the patient in combating the disease itself and infections.<sup>15</sup> Attention should also be paid to skin care and psychological support.<sup>11</sup>

Fistulography and barium studies as a modality of investigations to find the location and presence of distal obstruction were found to be helpful to some extent in decision making regarding surgical intervention. C.T scan and ultrasound abdomen are useful in detecting intra-abdominal abscesses and to determine route of drainage. Although use of octreotide effectively reduces the fistula output, the rate of spontaneous closure is not influenced.<sup>17</sup>

Majority of small intestine cutaneous fistulas are due to surgical misadventure. The conservative line of management, hoping for spontaneous closure of fistula, and staged surgery at appropriate time leads to lesser morbidity and mortality with a high fistula closure rate.

## CONCLUSION

Enterocutaneous fistulas are catastrophic situations occurring as a surgical complication or spontaneously as the result of trauma, inflammation and cancer. A plan of effective management must be drawn and decision

between conservative or surgical management is taken. After initial resuscitation, initiation of nutritional support is crucial. Multidisciplinary approach should be employed which should include the surgical team, the radiologist, competent nursing staff, dietician and a stoma therapist. Faecal fistula demands patience on the part of the doctor, patient and the family members.

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# RISKS AND COMPLICATIONS OF THYROID SURGERY: A 10 YEARS EXPERIENCE.

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SIKANDAR ALI SHAIKH

## ABSTRACT

**Objective** To evaluate the risks and complications of thyroid surgery in our setup.

**Study Design** An analytical study.

**Place & Duration  
of study**

This study was conducted at Civil Hospital Karachi, and Chandka Medical College Hospital Larkana over a period of 10 years from January 1996 to December 2005.

**Patients and  
Methods**

A total number of 450 patients with various types of goitre operated were included (280 in Civil Hospital Karachi and 170 in CMCH Larkana). Postoperative complications were evaluated in all patients. The data was obtained and analyzed by filling a specially designed proforma for each patient. Anaesthetic and cardiovascular complications were excluded.

**Results**

Among 450 patients, 46 were male and 388 female (male to female ration 0.16:1). Age ranged from 16 to 73 years (mean age 36 years). The common surgical procedures performed were subtotal thyroidectomy (70.22%) followed by lobectomy with isthmusectomy (22.67%). The common complications were haemorrhage and haematoma (2.0%) followed by laryngeal oedema (1.8%), and transient recurrent laryngeal nerve palsy (RLNP) (1.7%). Average hospital stay was 3.5 days in uncomplicated cases.

**Conclusion:**

It is concluded that proper patient selection, pre-operative evaluation, and skilled surgical technique are the hallmarks of success in thyroid surgery. Therefore it is considered to be safe and successful in the hands of surgeons with special interest in thyroid surgery.

**KEY WORDS:-**

Thyroidectomy, Complications, Risk Factors.

## INTRODUCTION

Goitre is a global health problem. It is also a major problem in our country, specially in the northern mountainous areas, where it is endemic.<sup>1</sup> In the endemic areas it is usually considered to be a normal feature and patients do not present to the doctors unless they have some complications like respiratory obstruction, stridor, toxicity or malignancy.<sup>2</sup> Anatomic location of the thyroid

gland, with its relationship to the vital structures like trachea, parathyroid glands and recurrent laryngeal nerve, increase the risk of complications in its surgery. Therefore, the possibility of complications after thyroidectomy is very high, but occurrence is very low, in this era of modern surgery.<sup>3</sup>

Thyroidectomy is one of the common major surgical procedures done in most of the teaching hospitals of Pakistan. Although surgeons are familiar with most of the complications of thyroidectomy but rate of complications vary among surgeons. Each thyroid surgeon therefore must establish an individual complication rate.<sup>4</sup>

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The aim of this study was to evaluate the risks and complications of thyroid surgery at Civil Hospital, Karachi and Chandka Medical College Hospital, Larkana, and to analyze and compare our results with the results published globally.

### PATIENTS & METHODS

This study was conducted at Surgical Unit-III & IV Dow Medical College & Civil Hospital, Karachi, and Surgical Unit-I, Chandka Medical College Hospital, Larkana, over a period of 10 years from August 1996 to December 2005 (6 years in Karachi & 4 years in Larkana).

A total number of 450 patients with various types of goitre operated were included in this study. Operations were performed by various Senior & Junior Consultants. The clinical assessment, operative findings, post operative complications were recorded in a proforma, especially designed for this purpose. A detailed history and comprehensive physical examination was performed in every case. In addition to routine investigations, every patient was subjected to  $I^{131}$  uptake, or  $Tc^{99}$  thyroid scanning, total serum  $T_3$ ,  $T_4$  & TSH levels, ECG and cardiac assessment. X-ray cervical spine and thoracic inlet were done in patients with large goitre to assess tracheal displacement. Indirect laryngoscopy was performed pre operatively in all patients and post operatively where ever indicated. FNAC was performed in almost all cases of solitary nodules. Serum calcium estimation was done post operatively in patients developing signs of hypocalcaemia. Thyrotoxic patients were initially treated with anti thyroid drugs and beta blockers to make them euthyroid before surgery.

All the patients were operated by or under supervision of consultant surgeons and all the wounds were drained with redivac drainage system. The resected specimen was sent for histopathological examination. The specific complications of thyroidectomy were studied and analyzed in this series. The anaesthetic and cardiovascular complications were excluded. Every patient was advised to visit out door clinic fortnightly for follow-up. A minimum of 6 months follow-up was done.

### RESULTS

Four hundred & fifty patients of different varieties of goitre underwent thyroidectomy of different types (table – I). The commonest surgical procedure performed was sub-total thyroidectomy in 316 cases (70.22%), followed by lobectomy plus isthmusectomy in 93 cases (20.67%). Sixty four patients were male and 388 female (male to female ratio 0.16:1). Our youngest patient was 16 years of age and oldest of 73 years. The mean age was 36 years. The maximum number of patients belonged to age group 21–30 years, 180 patients (40%), followed by 105 patients (23.33%) belonging to age group 31–40 years (table – II).

Table I Surgical procedures performed

Procedure	No. of Patients	%
Sub-total thyroidectomy	316	70.22
Lobectomy with isthmusectomy	93	20.67
Near total thyroidectomy	33	7.33
Total thyroidectomy	08	1.78

Table II Age Distribution

Age in years	No. of Patients	%
16 – 20	27	6
21 – 30	180	40
31 – 40	105	23.33
41 – 50	68	15.11
51 – 60	45	10
61 – 70	22	4.89
> – 70	03	0.67

Table III Preoperative Diagnosis

Disease Pattern	No. of Patients	%
Simple multinodular goitre	262	58.22
Solitary nodule (Benign)	85	18.89
Simple diffuse goitre	55	12.22
Toxic multinodular goitre	19	4.22
Diffuse toxic goitre	14	3.11
Malignant goitre	10	2.22
Toxic adenoma	5	1.11

Table IV Histopathology

Histopathological findings	No. of Patients	%
Nodular goitre	280	62.22
Colloid goitre	53	11.78
Follicular adenoma	64	14.22
Degenerative cyst	21	4.67
Thyroid hyperplasia	14	3.11
Follicular Carcinoma	06	1.33
Papillary Carcinoma	04	0.89
Toxic adenoma	05	1.11
Thyroiditis	03	0.67

Simple multinodular goitre was the commonest preoperative diagnosis, in 262 cases (58.22%), followed by benign solitary nodule, 85 cases (18.89%) table – III. The commonest histopathological lesions reported were nodular goitre in 280 patients (62.22%), followed by follicular adenoma in 64 patients (14.22%) and colloid goitre in 53 (11.78%) table – IV.

The average hospital stay in both places was 5.1 days. The stay in uncomplicated cases was 3.5 days while that of complicated cases was 7.5 days. The shortest stay was < 48 hours in 173 patients in Civil Hospital, Karachi. The longest stay was 14 days in a female aged 60 years, a

Table V Complications of thyroidectomy

Complications	No. of Patients	%
Haemorrhage:		
Primary	05	1.11
Reactionary	02	0.44
Hoarseness of voice		
Transient Unilateral RLNP	08	1.78
Laryngeal Oedema	08	1.78
Respiratory Obstruction		
Bilateral RLNP	01	0.22
Haematoma	02	0.44
Wound Complications		
Seroma	07	1.56
Infection	06	1.33
Oedema of Skin flaps	07	1.56
Adherent Skin with underlying structures	04	0.89
Transient Hypoparathyroidism	06	1.33
Hypothyroidism	05	1.11

case of malignant goitre in whom total thyroidectomy was performed. She suffered from obstruction of the airway and immediate tracheostomy was performed.

Among 450 cases of thyroidectomies done, 61 developed various complications (1.35%) Table-V. The most common complications were haemorrhage and haematoma in 9 cases (2.0%), laryngeal oedema in 8 cases (1.78%), and transient RLNP in 8 cases (1.78%).

## DISCUSSION

Most of the current reviews suggest that thyroidectomy can be done with little morbidity and mortality. It is zero % in majority of the current series. When these reviews were compared to our study, the morbidity was quite low and mortality was nil. In this series of 450 cases of thyroidectomies, sub-total thyroidectomy was the procedure most commonly performed (70.22%), followed by lobectomy (20.67%). In case of toxic goitre, a policy of leaving too little glandular tissue was adopted to avoid future recurrence.

Comparing total versus sub total thyroidectomy Friedman M, and Pacella BL<sup>6</sup> remarked that during surgery, if there is any suggestion that the laryngeal nerves or parathyroid glands would be at increased risk if a total resection were performed, it may be necessary to revert to a sub-total procedure. Jandousova E et al<sup>6</sup> in their personal experience with numerous thyroid gland operations remarked that major complications could be blamed on technical pitfalls. Their emphasis is put especially on careful dissection and the surgeon's experience.

Sharma AK and Mishra SK<sup>7</sup> in their study reported that short stay thyroidectomy was feasible in a developing

country. According to them out of 162 patients, 156 were discharged within 48 hours after surgery. In our study the hospital stay of patients in CHK was less and in CMCH, Larkana it was more than other reported studies in uncomplicated cases. The reason being that CMC Hospital is situated in peripheral part of Sindh and drains patients from most remote areas where health care facilities are minimum. These patients therefore always preferred to be discharged after removal of stitches.

Ignjatovic M et al<sup>8</sup> in their study of 2100 thyroidectomies had 14.3% complication rate. The most common complication was RLN injury in 9.3%, followed by hypocalcaemia in 4.7 %, haemorrhage and haematoma in 1.6% and mortality was 0.5%. SA Shaikh et al<sup>9</sup> reported 116 thyroidectomies from CMCH, Larkana out of which 40 patients developed some complications. Prim MP et al<sup>10</sup> in their study of 145 patients operated in Espana, reported hypocalcaemia in 3.3%, and unilateral RLN injury in 2.2% with 0.7% of fatal complications.

Khalid et al<sup>11</sup> reported 126 thyroidectomies performed at Shaikh Zaid Hospital, Lahore. Their post operative complication rate was haematoma 2.38%, transient hypocalcaemia 2.38%, wound infection 1.58% and RLNP 1.58%. Shaikh<sup>12</sup> reported a new approach in thyroidectomy of 20 cases, 5 developed complications of which 1 had transient RLNP and 4 patients developed hypertrophied scar.

Mitove F et al<sup>13</sup> in their retrospective study of the post operative complications in 129 patients operated for thyroid cancer in Bulgaria, reported that majority of the patients (90) were treated by total thyroidectomy and developed variety of complications as hypoparathyroidism in 40 patients (transient in 37 and permanent in 3 patients), injury to RLNs in 11 patients (4 patients required temporary tracheostomy), and haematoma in 1 patient. Pezzullo L et al<sup>14</sup> in their study of 131 patients operated for thyroid cancer in Italy, reported post operative complications as transient hypoparathyroidism 5.6%, transient RLNP in 8.5% and became permanent in 2.8% cases. Benzarti S et al<sup>15</sup> presented a retrospective study of 356 patients surgically treated for goitre in Tunis, observed post operative complications as haemorrhage (0.56%), unilateral RLNP (1.12%) and permanent hypoparathyroidism in 0.81% of cases.

Melik N et al<sup>16</sup> in their retrospective analysis was conducted for all thyroid operations over 79 patients in Switzerland, observed one RLN injury and 1 permanent hypocalcaemia. No revision operations were required for haematoma or infection. Peliukhovskii SV et al<sup>17</sup> performed 147 thyroidectomies and reported various kinds of post operative complications in 19 patients (12.9%). Jamski J et al<sup>18</sup> in their study of 2323 patients operated for various varieties of goitre, emphasized more

on RLNP and reported 190 patients (8.9%) presented RLN paralysis of different grade.

In this study of 450 cases the unilateral RLNP was 1.78% which was transient in nature, only one patient developed bilateral RLNP for which immediate tracheostomy was performed and patient recovered fully after 3 months. No case of permanent RLNP was reported as compared to other studies. Sikandar AS et al<sup>19</sup> in their study of 200 cases operated, 7 developed RLNP of which 3 patients demanded immediate tracheostomy. As we noticed the haemorrhage occurred in only 7 cases in this study, showing better results as compared to what is reported in the literature.

Regarding respiratory obstruction, two cases were due to compressing haematoma which were drained in operation theatre under general anaesthesia, and one case was of bilateral RLNP where immediate tracheostomy was performed. Post operative hypocalcaemia noted in 6 patients (1.33%), who responded to calcium and vitamin D replacement therapy. Majority of the cases were after total thyroidectomy. Zarnegar R et al<sup>20</sup> reported in their experience of thyroid surgery that localization of at least one parathyroid gland is essential to decrease this possible complication.

Our experience with wound complications is better than what is reported in the current literature. We had 7 cases (1.56%) of seroma, 6 cases of wound infection (1.33%) and 7 cases of oedema of skin flaps (1.56%). These were because of better surgical skills, superior sterilization technique, use of redivac suction drainage, and absorbable suture materials. All these factors helped reduced wound complications.

## CONCLUSIONS

The awareness about the risks and complications of the thyroidectomy, patients' selection, proper pre-operative evaluation, skilled surgical technique, and above all a dedicated postoperative care in thyrotoxic patients are part and parcel of success in thyroid surgery.

It is therefore concluded that thyroid surgery is safe and successful in the hands of surgeons with special interest in it.

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# ESTROGEN REPLACEMENT THERAPY TO TREAT CLIMACTERIC SYMPTOMS IN SURGICAL MENOPAUSAL WOMEN

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## ABSTRACT

### Objective

To determine the role of estrogen replacement therapy (ERT) in the alleviation of climacteric symptoms in surgical menopause.

**Study Design** Quasi experimental study.

### Patient and Methods

Two years study was conducted from March 2000 to September 2003, from out patient department, of "Menopausal Clinic" at Jinnah Postgraduate Medical Centre, Karachi. Hundred surgical menopausal women were selected who presented with severe climacteric symptoms. After detail history and examination, all patients were investigated to exclude the risk before institution of ERT.

### Results

Intervention of ERT produced marked improvement in most common symptoms i.e. hot flushes and sweating in 92.9% (C.I. 78 - 98.9 - p value 0.001) and depression in 81% improved (C.I. 56.5 - 95.2 - p value 0.001). Vaginal dryness improved in 88% (C.I. 64.9 - 98.6). Insomnia improved 53.3% (C.I. 54.4 - 97.4). Less common symptoms like dysuria also showed marked improvement after oral estrogen replacement therapy, minimum after 6 months till 2 years of therapy.

### Conclusion:

Short term (<5years) ERT might be considered for relatively small group of women who experience severe disruptive vasomotor symptoms or severe atrophic vaginitis. But more similar large studies need to be performed for more generalized therapeutic recommendation of ERT.

**KEY WORDS:-** Estrogen Replacement therapy, Vasomotor symptoms, Surgical menopause.

## INTRODUCTION

Surgical menopause is basically an induce menopause.<sup>1</sup> It occurs more rapidly than natural menopause, so the body is subjected to diminished hormones levels that results in early climacteric symptoms.<sup>2</sup> The major endocrine events seen after menopause are rise in serum FSH levels and decrease in serum estrogen and estradiol level.<sup>3</sup> The idea of preventing and treating climacteric

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symptoms by administrating estrogen, was first mentioned by Giest and Spiemann in 1932.

Women especially  $\leq 40$  years who under go surgical menopause, show sudden estrogen deficiency, which manifest itself in diverse ways. Surgical menopausal women have severe and abrupt onset of climacteric symptoms, this requires special attention for the therapeutic use of ERT. The cessation of menses usually happens around the age 45 - 50 years, could be five years on either side. The climacteric changes could be seen 15 years on either side of menopause.<sup>4,5</sup> The largest multicentre study in the Asian regions also

demonstrated considerable differences in the reporting of acute symptoms but over all vasomotor symptoms were less common in Western countries.<sup>7</sup>

Following TAH (hysterectomy) + BSO (bilateral salpingo-oophorectomy), the estrogen lacks may cause serious and potentially serious short and long term health problems. Many studies have shown that women who have experienced abrupt onset of menopause such as oophorectomy along with hysterectomy often suffer from very severe symptoms and these women approximately five times more likely than other women to be using ERT.<sup>8,9</sup> Following surgical menopause a pre-menopausal women (i.e. age = 40 or < 40 years), where there is no adequate estrogen replacement, there may be reduction in life expectancy of upto 1.4 years.<sup>10</sup>

The symptoms of menopause present differently in different women, depending upon individual distribution and function of estrogen receptors.<sup>11</sup> If ovaries are to be removed surgically, it was thought that ERT need to be continued at least upto to the age of 50 to avoid the risk of osteoporosis and cardiovascular disease.<sup>12</sup> But recent recommendation for prescribing ERT is, it should be used for the treatment of specific climacteric symptoms. Each women considering surgical menopause will have her own individual pattern of climacteric symptoms and response. Life style, personality and behavior have very much significant impact on women's quality of life.<sup>13</sup> Before substituting estrogen replacement therapy, complete evaluation of patient is also required i.e.; thyroid profile and lipid profile. Bone marrow density (DEXA) scan done only for osteoporosis evaluation. A mammogram must be performed each year and self breast examination every 6 month.

The objective of this study was to determine the role of estrogen replacement therapy (ERT) in the alleviation of climacteric symptoms in surgical menopause.

## PATIENTS & METHODS

The Quasi experimental study was conducted by taking hundred patients of surgical menopause having severe climacteric symptoms, from Menopausal clinic of Jinnah Postgraduate Medical Center from March 2000 – September, 2003. The intervention in this study is Estrogen therapy (oral & topical). Therapy continued for two years, with every quarterly follow-ups, according to proforma which included bio-data, history, examination and relevant investigations like serum FSH, total cholesterol & lipid profile, LFTs, thyroid profile mammogram, ECG as well histopathological report of removed uterus and ovaries, before taking ERT.

All patients who had total abdominal hysterectomy along with bilateral oophorectomy due to benign gynaecological

reasons were included in this study whereas patients having natural menopause, had single or both conserved healthy ovaries, bilateral oophorectomy after the age of natural menopause or family history of gynaecological malignancies or breast cancer especially in first degree relative were also excluded.

The data analysis and computation was done on package of SPSS version 10, compatible to developed proforma. The results of various clinical symptoms improvement were represented by their percentages and the difference in percentages was compared by statistical test of Chi-square or Yates corrected Chi-square test.

## RESULTS

This Quasi experimental study done on 100 surgical menopausal women ( $\leq 40$  years of age), in whom E.R.T., was given to alleviate the climacteric symptoms with two years follow-up. The valuable cases at the end of the study were only 57. The study yield following results. The common symptoms that we came across were vasomotor symptoms like hot flushes, sweating and palpitation (98%) while the least common symptoms were ( 3%) dryness and wrinkling of skin.

The common urogenital problems were urinary tract infection and vaginal discharges (69% and 65%) and least common symptom was decrease libido (5%). Depression found in 58% of cases. Intervention of ERT produced marked improvement against the most common symptoms that include hot flushes and sweating - 92.9% (C.I. 78 – 98.9 p-value 0.001) and palpitation 89.8% (C.I. 73.8 – 97.7 p-value 0.001). Weight gain, mastalgia, nausea, GIT discomfort, palpitation and headache were the side effects observed in 15% of cases (table I).

The most common side effect was weight gain in 7% of cases (i.e. 1 – 2kg increase from their previous weight). Five percent cases, had mastalgia after 6 months of therapy, without any breast pathology and normal mammogram (table II). Repeat thyroid profile only required in 2% of cases, in whom general complaint was palpitation (with in normal limits of TSH, T4, ECG and blood pressure). The least common side effects were nausea and GIT upsets (only 1% of cases).

## DISCUSSION

After intervention with ERT marked improvement occurred i.e. 98% in vasomotor symptoms, 90% in cases of vaginal dryness and similarly 84.1% in cases of UTI. It is increasingly clear that vasomotor symptoms result from impaired or altered regulation of endogenous endorphin and estrogens is potent regulator of these endorphins. It affects not only LH release but also release of other brain neurotransmitters which in turn cause modulation of autonomic peripheral nervous system, in order to control hot flushes and sweating.<sup>14</sup>

Literature search reveals population based surveillance studies where about 40% of postmenopausal women complaint of urogenital problems. Vaginal problems such as dryness, dyspareunia and discharge were reported in two out of 3 women at the age of 75 years. Given the present composition of the population in modern western countries, 8% of the total population experience urogenital problems; in United States 20 million women suffer from these socially disabling symptoms. Also, many women were embarrassed to complain unless specifically asked.<sup>14</sup>

Psychological disturbances i.e. depression (probably due to sudden estrogen deficiency and as a part of post hysterectomy syndrome) were found in this study. ERT showed significant improvement in physical and psychological welfare as well as in sleep quality.<sup>15</sup> This observation has been made by others in similar studies as well, favouring the hypothesis that menopausal symptoms may be associated with significant sleep disturbances. About 30% of all patients discontinued of ERT after six months period due to non affordability. Similarly 5% of total cases had transient relieve of symptoms but despite of it they stopped treatment because of fear of breast cancer. But this fear was not substantiated in 57% valuable patients with two years follow-up.

Seven percent of all cases developed weight gain i.e. 1-2kg increase from there initial weight, which is also documented in some studies but denied in other.<sup>16,17</sup> While reassurance done in 4 cases; did continue ERT till 2 years follow-up, without any further significant weight gain. Probably that initial weight gain seen was due to homeostatic response after the stressful event of surgery. The over all compliance of patients in 2 years follow-up with ERT was about 57%, which is almost similar to another local study.<sup>18</sup>

The over all compliance of ERT in 2 years follow up is only 57%. If the goal of ERT is to alleviate menopausal symptoms, the treatment duration is generally two to three years with gradual tapering off medication.<sup>19</sup> Same recommendation was followed in this study. The NAMS Advisory Panel report of 3<sup>rd</sup> October 2002; on the HERS and WHI studies made the recommendation that treatment of menopausal and vasomotor symptoms and pelvic atrophy remain the major indications for HRT/ERT. NAMS / ACOG and AHA confirmed that ERT is indicated for treatment of vasomotor symptoms, if severe enough.<sup>20</sup> However the recently published WHI study proves long term use has been discontinued because of increased risk of stroke with out any increased in breast cancer or heart attacks, the stratified results by age are very different.<sup>21</sup> So a five years duration has been recommendation with ERT if they are feeling well with relief of symptoms clinically.<sup>20</sup>

## CONCLUSIONS

Short term estrogen replacement therapy (i.e. less than 5 years duration) might be considered for relatively small group of women who experience either severe disruptive vasomotor symptoms or severe atrophic vaginitis in whom alternative therapies are not effective. But it requires larger sample size studies for its generalized therapeutic recommendation especially in the management of climacteric symptoms in surgical menopausal women.

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# HEPATIC TRAUMA MANAGEMENT IN A TERTIARY CARE HOSPITAL.

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## ABSTRACT

### Objective

To document experience of managing patients with hepatic trauma.

### Patient and

### Methods

This study was conducted in Surgical "A" unit, Lady Reading Hospital, Peshawar from August 2003 to September 2005. It was a descriptive study and all the patients were operated in emergency department.

### Results

A total of 364 trauma patients were received and among those 48 patients had liver trauma. 75% of patients had penetrating and 25% blunt trauma. Most of the patients had grade III liver injuries. There were no grade V and VI injury. Repair with perihepatic packing for liver injuries remained the most frequently performed procedure (41% of patients).

### Conclusion:

In a stable patient blunt trauma liver can be managed conservatively by serial examinations and investigations with emergency laparotomy facilities at hand. Perihepatic packing and damage control surgery is the valuable procedure at hand. Increasing grades of liver injuries leads to increasing morbidity and mortality.

**KEY WORDS:-** Hepatic trauma, Liver injuries, Grading system.

## INTRODUCTION

Liver is the largest solid organ in the abdominal cavity.<sup>1</sup> Liver can be injured by blunt and sharp trauma. Blunt trauma usually causes fracturing of liver but may result in vascular avulsion injury. Blunt trauma may cause sharp injury by fracturing ribs and drawing them into liver. Sharp weapons can cause deep penetrating wounds. Drivers occupying the right side of vehicle are more liable to liver trauma.<sup>1</sup>

Liver is the most frequently injured organ in penetrating abdominal trauma. Liver fractures caused by blunt injury are of two main types: (i) Liver fracture with tear in capsule and resulting in hemoperitoneum. (ii) The other fracture is without injury to the capsule resulting in haematoma (subcapsular). A severe trauma will result in a central fracture with multiple peripheral radiations.

Trauma scoring system has been devised and liver trauma management is being standardized. Injury scale by American Association for the surgery of trauma is as follows:

### Grade:

- I. Haematoma - subcapsular non-expanding <10% of surface area.  
Laceration - capsular tear, non bleeding <1 cm parenchymal depth.
- II. Haematoma - Sub capsular non-expanding 10-50% surface area intra parenchymal < 2 cm diameter.  
Laceration - capsular tear - active bleeding 1-3cm parenchymal depth 10 cm in length.
- III. Haematoma - sub capsular > 50% surface area or expanding ruptured subcapsular haematoma, with active bleeding. Intraparenchymal haematoma >2 cm or expanding.  
Laceration - >3 cm parenchymal depth.
- IV. Haematoma - Ruptured intraparenchymal haematoma with active bleeding.

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- Laceration - Parenchymal disruption involving 25-30% of hepatic lobe.
- V. Haematoma - Parenchymal disruption >50% of hepatic lobe.
- Laceration - Intrahepatic venous injury - retrohepatic juxta hepatic venous injury.
- VI. Vascular avulsion.

The objective of this study was to document the management of patients of different grades of liver injury.

**PATIENTS & METHODS:**

The study was conducted in Surgical "A" unit of PGMI, LRH, Peshawar from August 2003 to September 2005. This was a descriptive study. All the patients presented to our casualty. They were examined and resuscitated at the same time. A brief history regarding the type of injury and various co-morbid states was taken. Routine investigations were done. Decision regarding laparotomy was taken after examination and investigation. Another indication for laparotomy was persistent low blood pressure after adequate infusions. Laparotomy was done using midline incision, findings were noted during laparotomy and grading of liver injury was done. Stable patients were put on conservative management. They were diagnosed and subsequently graded on ultrasound and C.T abdomen. Patients having a collection of around 500 ml were also considered for conservative management. Such patients were closely monitored for blood pressure, pulse, abdominal tenderness, abdominal girth, hourly urine and serial haemoglobin estimations.

The criteria for conservative management was:

1. Blunt trauma abdomen patients with out history of loss of consciousness.
2. Haemodynamically stable patient.
3. Achievement of haemodynamic stability with modest amount of i/v fluids.
4. No additional injury or signs of peritoneal irritation.

During Laparotomy the following procedures were done:

1. Perihepatic packing.
2. Ligation of hepatic bleeding.
3. Debridement only with packing of lacerated liver.
4. Haemostatic suturing of liver parenchyma in clear cut injuries.
5. Lobectomy
6. Right hepatectomy

**RESULTS**

We received a total of 364 trauma patients in casualty department during 2 years period. Among 364 patients, 48 had liver injury. Male were 40 while female were 8. Age range was from 20 to 60 years with mean of 35 years. In

our unit firearm injuries tops the list of trauma patients consisting of 75% of total patients. 25% of patients were having blunt trauma injury. Ten patients had isolated liver injury while 41% had two organ system involvement and 37.5% had 3 organ system involved. 10% patients were treated conservatively while in rest of the patients laparotomy was performed.

Most of the patients (55%) had grade III liver injuries with 12 patients (8%) having associated gut injuries and 6 patients had trauma to urological system, while 12.5% of patients had associated chest and diaphragmatic injuries requiring chest intubation. 12.5% of patients were having thoracoabdominal injury with very high mortality. 20% of patients were having grade IV injuries with associated gut injuries (20.5%) and chest injuries (4.1%). There were no vascular injuries of grade V and VI.

Among the organ systems injury two organs system injury was on top of the list with 41.6% of patients presenting as both hepatobiliary system and gastrointestinal system involvement. In majority of cases perihepatic packing was performed and it was successful when packs were removed 24 hours later (58.8% of patients). In associated injuries hemostasis and suturing of perforation remained the most frequently performed procedure (20% of patients).

Majority of patients came to our emergency unit after more than 4 hours. 16.6% of patients were received in stable condition. 45.8% of patients presented late and had complications. Among the complications residual abscess was the most frequent (25%). In 4 patients ultrasound guided aspiration was done which was successful, while in 2 laparotomy was performed for multiple abscesses. Second most frequent complication was bile leak (16%). They were managed conservatively (table I).

**Table I** Various Postoperative Complications

Complications	No. of Cases	Percentage
Abscess	12	24%
Bile leaks	08	2%
Wound dehiscence	08	16%
Jaundice	04	8%
Renal failure	04	08%
Bleeding	04	08%
Coagulopathy	02	04%
Sepsis	02	04%
Diaphragmatic injury	02	04%
Pleural effusion	01	02%
Pneumonia	01	02%

## DISCUSSION

Liver is highly vascular and vital organ<sup>1</sup>. It is situated in the upper abdomen protected by ribs. This protective cage and strategic position leads to exposure problems during laparotomy for liver injuries. Sometimes the incision has to be extended to thorax to get goods exposure. Difficulties encountered during management of bleeding liver and other unstable patients has lead to the advent on damaged control surgery.

Patients having liver injuries can be managed conservatively. The criteria for conservative management include CT scanning with IV contrast. There should be no free contrast around liver. Any collection/bile leaks can be looked after by ultrasound guided aspiration. Any free contrast and massive necrotic regions in liver is an indication for surgery<sup>1</sup>. Patients with free flowing contrast on CT but stable clinically can be managed by embolization<sup>1</sup>.

Carrillo EH<sup>4</sup> has termed angio-embolization to be life saving in patients persistently bleeding after perihepatic packing. Mohr AM et al<sup>5</sup> has termed angio-embolization as safe and effective procedure. But at the same time he also stressed early embolization. As angio-embolization is also associated with complications like liver necrosis and abscess<sup>5</sup>. Sriussadaporn<sup>3</sup> reported that 3% of conservatively managed patients heeded angio-embolization. Hagimora A<sup>6</sup> concluded that absorbable material should not be used for angioembolisation as it leads to pseudoaneurysm formation.

We received 75% of patients with penetrating abdominal trauma (firearm injuries). Asensio JA<sup>7</sup> et al reported that 79% of patients with liver injuries were having penetrating abdominal trauma while Buddhaboriwan T<sup>8</sup>, Brammer RD<sup>9</sup>, Sariussadopora S<sup>3</sup>, Claridge JA<sup>10</sup>, David Richardson et al<sup>11</sup> reported that blunt trauma is the most frequent cause of liver injury. Gurs<sup>12</sup> reported high mortality in blunt abdominal trauma. Most of the authors reported high incidence of blunt trauma liver as the leading cause but in our series it is the penetrating (firearm) injury.

In our series 20% of cases, patients were having isolated liver injuries while in 80% of cases it was multiple organ system injuries. 20 patients (41.6%) were having two system involvement while 37.5% of patients were having 3 organ system injuries. Milotie F et al<sup>13</sup> reported 90% of cases injured in Croatia conflict were having liver and multi organ system involvement. Liver injuries in his study were of grade III and IV in 75% of cases. His survival rate was 50% with high rate of septic complications. His conclusion was that injuries having multi system involvement have very high mortality. 10% of our patients were treated conservatively while 90% were managed actively (by laparotomy). Bonaviol I et al<sup>14</sup> treated

conservatively 25% of patients and his results were successful managed in 88.5% of cases. Brammor RD<sup>9</sup> reports treated conservatively 50% of patients with blunt trauma and concluded that most of the patients with liver injuries can be managed conservatively. Trunkey<sup>5</sup> said that some of the authors are over enthusiastic about conservative management and surgeons should keep every armamentarium in their hand.

In our series all patients were operated in casualty operation theater and principles of damage control laparotomy were applied. After giving midline incision the abdominal cavity was packed the patient was resuscitated, until well stable. After the stability was achieved hemostasis was secured and a search was made for injuries and various operative procedures were performed.

The operative procedure most commonly done was perihepatic packing and drainage. Such packs were removed after 24 hours with no bleeding. Perihepatic packing was followed by debridement/drainage-16.6%. Haemostatic suturing hepatorrhaphy-12.5% and suture ligation of bleeders-8.3%, were the most frequent procedures. Although suture ligation of bleeders in injured liver is the most definitive management in controlling haemostasis. Usually it is not possible because of the unstable condition of patient or multiple vessel injury retracting into the liver parenchyma or hepatic venous injury which can not be controlled by clamping hepatic artery. Hepatic venous injuries can only be managed definitively by taking control of inferior vena cava (IVC) by passing above and below the liver.

Gur S<sup>12</sup> reported that primary suturing was done in more than 80% of cases of I, II, III grade injuries. In less than 20% of cases resectional debridement was done in grade I, II, III. While in grade IV, V and VI most of the patients had resectional debridement. Gur S reported high mortality in IV, V and VI grades. Our series showed only 20% cases in grade IV. There were no grade V and VI injuries. Milotie F et al<sup>13</sup> managed his 75% of cases by debridement, ligation of bleeders and bile ducts. Buddhaboriwan T<sup>8</sup> reported that most of the cases in his series were grade II and hepatorrhaphy, suture ligation of bleeders and drainage of liver was performed in majority of cases. Gao JM<sup>16</sup> reported success rate of 80% in retrohepatic caval injury with packing and 82% in patients without such injury. Sariussadoporn S<sup>3</sup> reported performing perihepatic packing in 21% of patients with liver injury. Two patients needed subsequent angio-embolization. He termed perihepatic packing as life saving. David Richardson et al<sup>11</sup> termed packing and embolization effective methods of haemorrhage control.

Fengjun L<sup>17</sup> reported management of 197 patients along

the lines of damage control surgery. He reported success in pancreatic duodenal injury by doing damage control surgery. He concluded that major surgery is not possible without damage control. Chino J<sup>18</sup> reported successfully treated 2 patients with juxta-hepatic venous injury with perihepatic packing and recombinant factor VII. Vatanaprasan T<sup>19</sup> termed perihepatic packing to be useful procedure when termination of operation was considered necessary. Perihepatic packing was used in 73% of patients high-grade injuries and yield success rate of 65.5%. 25% of patients of high grade injuries died.

In our series abscess formation in 25%, bile leak in 13% and wound dehiscence in 13% of cases and were the frequent tabulated complications. Overall mortality was high - 12% in our series. The cause of death was hemorrhage, sepsis, coagulopathy, renal failure. Nicholas JM et al<sup>20</sup> reported intraabdominal abscess in 18% of cases and 42% of patients had sepsis. Mohr AM et al<sup>5</sup> reported death rate of 45% in arterial embolization procedure, the cause being necrosis, biliary leaks and abscess. Milotie F et al<sup>13</sup> reported 50% complications in liver injuries, which consisted of sepsis hemorrhage and abscess. Gao JM and associates<sup>16</sup> reported an overall mortality of 11.8% and high mortality in grade IV and V. Buddhaboriwan T<sup>8</sup> reported 76.6% survival rate. Bonariol F et al<sup>14</sup> reported a mortality rate of 15%. Vatanaprasan T<sup>19</sup> reported a mortality 12.1%.

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# MORBIDITY RESULTING FROM DELAYED PRESENTATION OF SNAKE BITES CASES

ASIF H.OSMANI, RASHEED DURRANI, JAMAL ARA

## ABSTRACT

**Objective** To determine the frequency of morbidity in delayed presentation from snake bite and to evaluate various causes regarding delayed presentation to tertiary care center.

**Study Design:** Case series.

## Place and Duration

**of Study:** National poison control center (Medical unit 1), Jinnah Postgraduate Medical Center, Karachi, over a period of one year from 1st April- 30th september 2005 and 1st May-30th October 2006.

## Subject and Methods

One hundred and ten patients were admitted with the diagnosis of snake bite. All males and females of age group between 11- 80 years were included in the study with mean age being 30.9 years. Snake bite victims came from Southern Sindh including Thar, Gharo, Mir pur sakhro, Korangi, Orangi, Hub (Balochistan). All the patients were injected with Polyvalent anti snake venom and tetanus toxoid regardless of time elapsed in their presentation.

## Results

There were one hundred and ten patients included in the study. There were 72 males and 38 females. Thirty patients came to NPCC early (within 4 hours), treated promptly and hence recovered. The patients who came late developed complications like wound infection, bleeding diathesis, renal failure, septicemia and shock. There were 80 patients who came late i.e after 4 hours. Causes of delayed presentation were, 49 patients initially visited local practitioners or quacks, 14 patients did self medication first, 11 patients had transport problems and 6 patients had to cover long distances to reach to NPCC. Morbidity associated with delayed presentation were pain in 75 patients, along with it 62 wound infection. 58 patients had bleeding from the wound, 30 patients had bleeding from other sites and 10 patients were hypotensive. Eight patients died due to these complications.

## Conclusion:

There is significant time delay from snake bite to arrival of patient in the hospital. This study highlights the importance of time factor in snake bite management. Early treatment plays an important role in the fate of patients with snake bite. Problems of late arrival at the hospital can be overcome by organizing snake bite awareness programs regarding the importance of early treatment, quick transport and avoiding treatment from local practitioners and quacks. The local district hospitals should be equipped with trained staff, antivenom, tetanus toxoid and antibiotics to manage the victims. There should also be improvement in ambulance transportation services to bring the critical patients to tertiary care centers without any waste of time.

**KEY WORDS:-** Snake bite, Morbidity, Delayed presentation.

## INTRODUCTION

Snake bite remains a public health problem in many

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Karachi.

countries including Pakistan. It is difficult to be precise about exact number of snake bite cases. It is estimated that the incidence of snake envenomation could exceed 5 million per year. About 100,000 of these develop severe sequelae. The global disparity in epidemiological data reflects variation in health reporting accuracy as well as the diversity of economic and ecological condition'.

Poisonous snakes are present all over Pakistan. Out of 2500 species of snakes found in the world 216 species are in India and Pakistan. Out of which 52 are poisonous<sup>2</sup>. The common poisonous snakes found in Southern Sindh are Cobra(*Naja Naja*); Indian Krait(*Vipera Russeli Russeli*); Russel's Viper(*Vruss Elisamensis*) commonly called Dabois; Saw scaled viper also called Lundibala or Jalabi in Sindh folk lore. Vipers easily pass through clothing and injects a fatal dose of venom. The maxilla of cobra carries other teeth besides poisonous fangs which are short, fixed and grooved so they cannot bite through clothing or may give sub lethal dose. The main difference is that venom of viper is vasculotoxic and that of cobra is neurotoxic. Composition of viperidae venom includes proteolysin, hyaluronidase, colloagenase<sup>3</sup>. Morbidity and mortality resulting from snake bite envenomation also depends on species of snake involved, since the estimated dose of venom varies with species. Among the various species the average yield per bite in terms of dry weight hypophylized venom is 60 mg of Cobra, 63 mg of Russell's Viper, 20 mg of Krait and 13 mg of saw scaled viper, their respective fatal doses are much smaller viz 12 mg, 15 mg, 6 mg and 8 mg<sup>4</sup>.

The age and sex of snake bite victims throw light on vulnerable section of the population. Although it occurs in all age groups, the large majority of (90%) are in males aged 11 – 50 years. The predominance of male victims suggest that males are exposed to high risk due to outdoor activity<sup>5</sup>. The high incidence of snake bite between 4 am to midnight corresponds well with the period of outdoor activity observed in most studies. The affected class includes farmers, hunters and hunders<sup>6</sup> and workers on developmental sites. In majority of patients the bite site are maximal in lower limbs(about two third)<sup>7</sup>with 40% occurring in feet alone.

Failure to reach the hospital in time is the main reason for delay in proper management. Because the socio cultural profile in Pakistan different from the western world, most of the people have low level of awareness and general education, in addition to the fact that alternate therapies are rampant and there is lack of adequate health transport system, the time to seek treatment is especially prolonged. The objective of this study is to evaluate the frequency of morbidity and mortality resulting from delayed presentation from snake bite.

#### PATIENTS & METHODS:

This case series was carried out in National Poison Control Center, JPMC during the period of one year from 1st April to 30<sup>th</sup> September 2005 and 1<sup>st</sup> May- 30<sup>th</sup> October 2006, one hundred and ten cases of snake bite were included. Majority of victims were between 11 years- 80 years with mean age of 30.9 years. Victims came from Southern Sindh including Thar, Thatta, Gharo, Mirpur

sakhro, Korangi, Orangi and Hub(Balochistan). The diagnosis was made after detailed history and thorough local examination of bite area and systemic examination.

All the patients were injected polyvalent antsnake venom after test dose. Monovalent ASV is ideal but as it is difficult to identify the culprit species, so polyvalent is widely used because it is easily available, inexpensive and not species specific.<sup>8</sup> There is no ideal dose.<sup>9</sup> Conventionally 50 ml (5 vials) of ASV is infused in mild infections like local swelling, purpura or echymosis. Moderate envenomation is defined in the presence of coagulation defects or mild systemic manifestations merits the use of 100ml (10 vials) and 150ml (15 vials) infused in severe cases like DIC, encephalopathy or paralysis.<sup>10</sup> Blood CP was done as it indicates infection and was done along with coagulation profile in patients who had bleeding diathesis. Renal function tests included urea, creatinine and electrolytes and done in patients who were oliguric, hemturic and hypotensive. Statistical analysis, data was recorded on SPSS 10.0 version. The results were recorded in ratio, mean, percentages.

#### RESULTS:

One hundred and ten patients of snake bites came to NPCC in one year of study duration. There were 72 males and 38 females. Only 30 patients came within 4 hours. Forty eight patients came after 9 hours or later. Forty nine patients initially received treatment from local practitioners while 14 had self medication. Seventeen patients lived at far distances and had transport problem. Morbidity is given in table I.

Table I Morbidity

Signs & Symptoms	No. of Patients	Percentages
Asymptomatic	5	6.25
Pain	75	93.00
Wound Infection	62	77.50
Bleeding from wound	58	72.50
Bleeding from other site	30	37.50
Hypotention	10	12.50

#### DISCUSSION:

Snake bite is a common health problem that has its own importance as its mortality in Pakistan ranges between 18 – 20 per 100,000 population.<sup>11</sup> Morbidity and mortality depends upon the species of snake and fatal doses injected. However once bitten, a wide spectrum of clinical manifestation may result. It was observed that 30 patients who came directly to NPCC within 4 hours were asymptomatic or only had pain at the bite site. They were injected antsnake venom immediately as the best effects of antsnake venom are observed within 4 hours of snake

bite.<sup>10</sup> It is also indicated immediately if patients have haemostatic abnormalities, shock, neurotoxicity, myotoxicity, nephrotoxicity or several local envenoming.<sup>12</sup> Along with ASV, tetanus toxoid was also given as most of our patients were working in agricultural fields, also four cases of tetanus were documented by Russel, following snake bite.<sup>13</sup> These patients were discharged after 1 day and developed no complications.

There were 80 patients who came after 4 hours of snake bite out of which 49 (44.5%) patients went to local practitioners before coming to NPCC. It has been reported that in developing countries up to 80% individuals were bitten by snakes first consult traditional practitioners before reaching medical centers.<sup>14,15</sup> There were 14 (12.7%) patients who initially did self medication by applying tourniquets incorrectly, giving cuts at bite site which induced local wound necrosis providing ideal situation for proliferation of micro organisms resulting in wound infection. 11 (10%) victims had transport problems due to non availability of transport. Non availability of the ambulance services in our country is another factor as patients had to arrange their own transport for coming to the hospital which was time consuming. At least there were 6 (5.4%) people who had to cover long distances to reach to NPCC . Out of 80 patients who came after 4 hours, 5(6.25%) were asymptomatic, 75(93%) patients had pain, 62(77.5%) patients had wound infection, 58 (72.5%) patients had prolong bleeding from the wound, 30(37.5%) patients had bleeding from other site and 10(12.5%) had hypotension. Most of the patients had more than one symptom. There were 8 patients who expired due to the complications.

#### CONCLUSION:

Early treatment plays an important role in the fate of snake bite patients. Time lapse between snake envenomation and provision of treatment can be shortened by overcoming the problems of delayed arrival at hospital which can be achieved by organizing snake bite awareness programs regarding early treatment and grave complications that can result if the patient remains untreated or treated inappropriately.

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# AUDIT OF HEAD AND NECK CANCER: HOSPITAL BASED STATISTICS OF ISLAMABAD

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MUHAMMAD AJMAL

## ABSTRACT

*Head and Neck Cancers are the leading cancer of South East Asia. Because of dietary habits of this region and poor socioeconomic conditions oral cavity cancers and pharyngeal cancers are common respectively. A hospital based cancer registry is maintained from February 2000 to February 2004 in Pakistan Institute of Medical Sciences, Islamabad and National Oncology Research Institute (NORI), Islamabad. All cancer patients reported in that period examined, staged, biopsied, discussed and treated accordingly. 714 cases were seen, 458 male (64.1%) and 256 females (35.9%) . Leading cancer was oral cavity 228 (31.9%), larynx 127 (17.8%), hypopharynx 105 (14%), nose and nasopharynx 69(9.6%) and unknown primary 44 (6.16%). Summing up the results oral cavity and laryngopharyngeal cancers constituted 72.5% of head and neck cancers.*

**KEY WORDS:-** *Head and neck cancer statistics, ENT cancer statistics, ENT cancer audit*

## INTRODUCTION

Cancer is a leading cause of death worldwide. If we compare the cancer statistics worldwide its incidence is different in male and females, different religions, different regions and races. The review of literature coming out of the West shows oral cancers as sixth most common cancer. The two-year data of Karachi, Pakistan cancer registry shows oral cancer as the second most common malignancy in both males and females<sup>1</sup> but many of statistics of this region also conclude it as a most common tumor. When literature is reviewed it is found that incidence of cancer is different in different part of world.

## MATERIAL AND METHODS

Pakistan Institute of Medical Sciences, Islamabad is a tertiary care hospital. Head and neck cancers are referred to this hospital from suburbs of Islamabad and Rawalpindi. All Head and neck cancers referred to National Oncology research Institute (NORI) are also presented and discussed in the ENT department of Pakistan Institute of Medical Sciences in Joint cancer clinic since 1988. An Audit of all Head neck cancers was

carried out from 2000 to 2004. All cases examined, biopsied, staged and then presented in Joint cancer clinics with oncologist. Cases were discussed and treatment planned accordingly. All cases seen during February 2000 to February 2004 recorded on computer. Data then analyzed using standard computer software.

## RESULTS

A total of 714 cases of Head and Neck cancers were seen during 4 year period, 256 cases were females and 458 cases males, constituting 35.9% and 64.1% respectively. 80.3% of the cases were above 40 years. Mean age was 51.6 years with standard deviation of 15.48 years. Eight tumors were found in children under the age of 10 years. Leading cancer was oral cavity 228 (31.9%), larynx 127 (17.8%), hypopharynx 105 (14%), nose and nasopharynx 69(9.6%) and unknown primary 44 (6.16%). Details are given in table I.

## DISCUSSION

The incidence of both oral and pharyngeal cancer among men is highest in Northern France, Southern India, a few areas of central and Eastern Europe, and Latin America. Among women, the highest incidence is observed in India. Oral/pharyngeal ratio is everywhere systematically lower in men compared to women.<sup>2</sup> Study done in IRNUM, University campus Peshawar revealed head neck cancer as the most common tumor ranking first amongst ten common tumors in males; as also reported by PMRC

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**Table I** Frequency of tumors at various sites.

Primary site	Frequency	Relative percentage
Oral cavity	228	31.9%
Larynx	127	17.8%
Hypopharynx	105	14%
Unknown Primary	44	6.16%
Nose	34	4.76%
Nasopharynx	35	4.9%
Thyroid	26	3.64%
Oropharynx	28	3.92%
Paranasal Sinuses	21	2.94%
Parotid	19	2.66%
Ear	17	2.38%
Esophagus	9	1.26%
Submandibular Gland	5	0.700%
Farapharyngeal Space	4	0.56%
Mediastinum	3	0.42%
Orbit	2	0.28%
Skin, face, bronchus, trachea	7	0.98%
Total	714	100%

1982, (multicentric data of the whole country), while in females it is the 2<sup>nd</sup> commonest tumor, preceding only by carcinoma breast. According to the study done in Pakistan Medical Research Council (PMRC), oral cavity cancer is found to be the most common tumor in males and 2<sup>nd</sup> common after breast cancer in females. In USA, various studies showed carcinoma of oral cavity as 10<sup>th</sup> commonest tumor<sup>2</sup>. Cancer profile of Hyderabad showed<sup>4</sup> most common malignancies (ASR per 100,000) in males were oral cavity (11.8), lymphoma (10.6), lung (8.0), urinary bladder (6.8), prostate (4.8), liver (4.4), pharynx (4.2), colo-rectum (3.6), larynx (3.2), and skin (3.2). The cancers in females (ASR per 100,000) were breast (22.4), oral cavity (11.5), gall bladder (4.8), esophagus (4.2), cervix (3.6), ovary (3.4), colo-rectum (3.4), lymphoma (3.4), uterus (3.4), and thyroid (2.4). Similarly Karachi cancer registry<sup>5</sup> showed cancer of the oral cavity ranked 2<sup>nd</sup> in Karachi in both genders. Cancer of the pharynx ranked 7<sup>th</sup> in males and 14<sup>th</sup> in females.

Reviewing the statistics from different parts of the world show altogether different statistics. In France<sup>6</sup> head and neck cancers rank 4<sup>th</sup> and it concluded as a result of alcohol and smoking. In America Head and neck cancers rank 10<sup>th</sup><sup>2</sup>. In India statistics show a very high incidence of head and neck cancers and rank 2<sup>nd</sup> after lung cancer in males and breast cancer in females. India and Pakistan shares same cultural and geographical area hence

comparison of Indian and Pakistani cancer statistics are nearly similar. In Indian Muslim<sup>7</sup> men, the lung appears to be at highest risk, followed by the larynx, esophagus, tongue, and hypopharynx, whereas in non-Muslim men, the esophagus is the commonest site, followed by the lung, larynx, and tongue. In women, breast and cervix cancers, which rank first and second, respectively, in frequency in Muslims, reverse their positions in non-Muslim women. In another study of Bombay, India<sup>8</sup>, cancer incidence was different in Christian males, the lung appears to be at highest risk, followed by the stomach, esophagus and larynx, whilst in non-Christian males the esophagus is the commonest site followed by the lung, larynx and tongue. Another study<sup>9</sup> of this region shows the common sites of cancer appear to vary greatly between the total Bombay population and the Sindhi group. In Sindhi men, for example, cancers of the lung, large bowel, prostate, kidneys and leukemia's are the most commonly seen, whereas laryngeal and oesophageal cancers predominate in the general population of Bombay. Reviewing the literature from Eastern India<sup>10</sup>, most frequently reported malignancies in males were lung cancer (16.3%), followed by cancers of the oral cavity (7.1%), pharynx (5.7%) and larynx (5.7%). In females, the most frequently reported malignancies were breast (22.7%) followed by uterine cervix (17.5%), gallbladder (6.4%) and ovary (5.8%).

National Cancer Data Base of North America<sup>11</sup> accrued from hospital based cancer registries shows that head and neck cancers contributed 6.6% of overall cancers. The largest proportion of cases arose in the larynx (20.9%) and oral cavity, including lip (17.6%) and thyroid gland (15.8%). Squamous cell carcinoma (55.8%) was the most common histological finding, followed by adenocarcinoma (19.4%) and lymphoma (15.1%). Karachi cancer registry<sup>12</sup> showed oral cavity and larynx were the commonly affected sites, followed by pharynx. In females, oral cavity was the preponderant site. A rising incidence was observed in both genders, more apparent in males. About 30% of oral, 28.6% of the nasopharyngeal, 6.3% of the oropharyngeal, and 2.6% of laryngeal cancers occurred in patients 40 years and younger.

We also have found that like many studies of this region of southeast Asia, oral cavity cancer is the leading cancer followed by laryngopharyngeal cancer which constituted about 73% of our cases. Oral cavity cancer is related to two habits betel nuts and *Naswar*. While hypopharyngeal cancer incidence is because of low socioeconomic background and many related precancerous conditions like Plummer Vinson syndrome And iron deficiency anemia. Laryngeal cancers are related to smoking.

## CONCLUSION

Head and neck cancers are top ranking cancers in Pakistan and India. Oral cavity cancer is also found most common among head and neck cancers. It is important to prevent this menace as many of the studies concluded it is secondary to use of betel nuts *naswar*, and smoking.

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# LARGE URETHRAL CALCULI WITH PERIURETHRAL ABSCESS AND FISTULAE

BASHARAT ALI KHAN, ZIA-UD-DIN AFRIDI, USMAN RIAZ, TABINDA USMAN

## ABSTRACT

*We are reporting a case of 60 years old male who had a suprapubic catheter already passed for urinary retention. He had an abscess over penile shaft. Operative findings revealed two large urethral calculi in penile shaft. Calculi were removed via urethral fistulae, formed spontaneously over a period of 30 days.*

**KEY WORDS:-** Urethral calculi, Urethral fistula, Peri-urethral Abscess

## INTRODUCTION

Urethral stones in men are rare clinical entity<sup>1</sup> with an incidence of less than 0.3 % of all urolithiasis<sup>2</sup>. Most of them migrate from the urinary bladder. Urethral stones are rarely formed primarily in the urethra and are usually associated with urethral strictures or diverticulae<sup>3</sup>. Urethral stones are classified into native stones (those formed de novo in the urethra) or migrant (those stones that pass into the urethra from the kidney or the bladder). Native urethral stones account for <10% of all urethral calculi and are usually associated with chronic urinary infection, either within a urethral diverticulum or proximal to urethral obstruction<sup>4</sup>. Impaction of calculi in penile urethra, although rare, can manifest with acute urinary retention in patients<sup>5</sup>. If impacted for a long time urethral calculi can present with peri-urethral abscess or urethrocutaneous fistula<sup>6</sup>.

## CASE REPORT

A 60 year old man developed acute urinary retention 30 days back. At a peripheral hospital attempts at urethral catheterization failed. A suprapubic catheter was then passed to relieve urinary retention and the patient was discharged home. After 30 days patient presented with an abscess over penile shaft along with fever. On examination two fistulae were found over shaft of penis (figure 1).

He had history of ischemic heart disease. On cardiac evaluation his echocardiography revealed 30 percent ejection fraction. He was categorized ASA Grade III and was operated under spinal anesthesia. Incision and drainage of periurethral abscess and wound debridement was done. Per operatively two calculi were removed through fistulae over penile shaft as shown in figure 2 A &

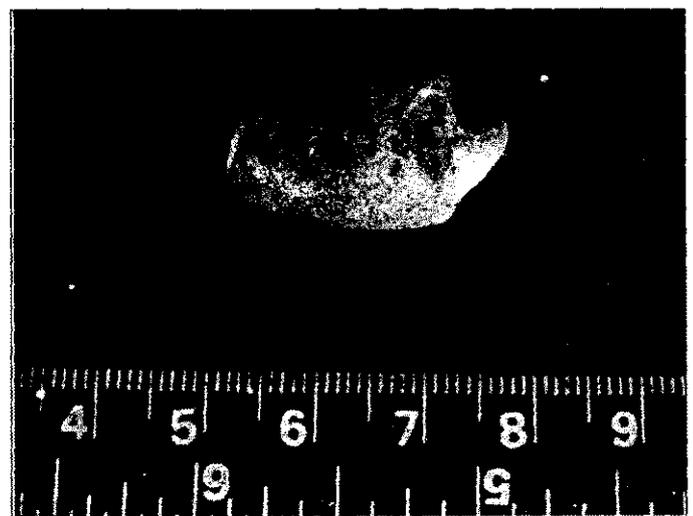
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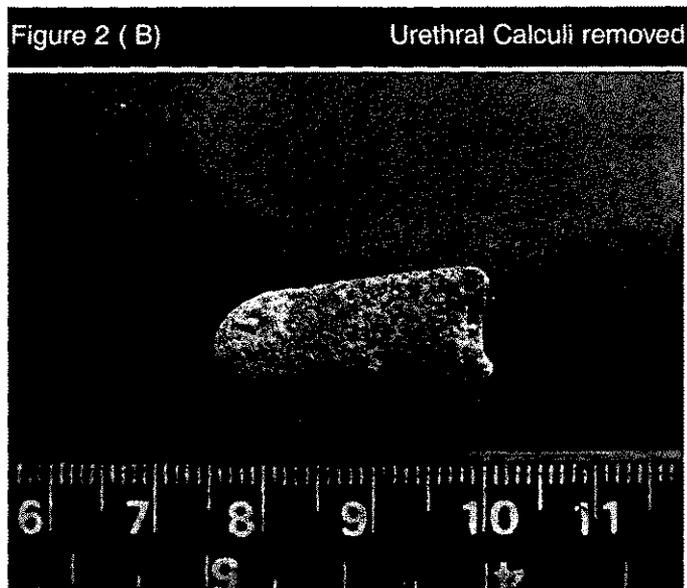
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Figure 1: Urethral fistula over penile shaft.



Figure 2 ( A ) Urethral Calculi removed





Stone sizes were as follows: proximal calculus measured 3.0cm into 1.5cm and distal calculus 2.5 into 1.5cms. Post operatively patient recovered very well and discharged home to be followed up in outpatients department.

#### DISCUSSION

The anterior<sup>6</sup> and the posterior urethra<sup>7</sup> are reported as the most common sites of urethral stones. They are thought to be relatively common in childhood in developing countries because of the high prevalence of bladder calculi. Urethral calculi are rare in women. Majority of the urethral calculi in developing countries are thought to consist of struvite and uric acid, while those in developed world are mainly formed of calcium oxalate. Urethral calculi may present with acute urinary retention<sup>2</sup>. There are various opinions about the frequency of acute retention of urine caused by urethral calculi, ranging from very frequent, to infrequent, to not at all<sup>8</sup>.

There may be associated history of severe flank pain, haematuria and pain in the penis. Some patients may complain of sudden stoppage of urine flow during urinating or dysuria<sup>2</sup>. Stones that develop within the kidney will often migrate down the ureter. Most stones less than 6 mm in size will eventually pass out. However, larger stones may become lodged within the urethra. The urethra of the adult male has a caliber of about 28 Fr and by this token should allow free passage of stone less than 1.0 cm. Similar pain can be produced by blood clots or tissue fragments that become lodged in the urethra. Urethral calculi bigger than 1cm may be associated with

urethro-cutaneous fistulae which follow impaction, urethral obstruction and abscess formation.<sup>9</sup>

There seems to be a consensus that treatment is essentially based on the size, shape and location of urethral stones, and on the associated anatomical pathology of the urethra. Treatment options include open removal of urethral calculi via an external urethrotomy<sup>3</sup>. Failure of external urethrotomy may later on result in fistula formation. In case of posterior urethral stone bougie is used to push the calculus back into urinary bladder followed by Cystolitholapaxy<sup>4</sup>. Extracorporeal intraurethral holmium lasertripsy<sup>6</sup> is a feasible, safe, and effective minimally invasive alternative for the treatment of impacted male urethral calculi.

In this patient the calculi were lodged in urethra later on causing infection, abscess and fistulae formation. The calculi were removed through the urethrocutaneous fistulae already formed.

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# SESSILE OSTEOCHONDROMA IN A CASE OF DIAPHYSEAL ACLASIA

MUHAMMAD UMAR AMIN, RABIA MAHMOOD,

**ABSTRACT**

*We report a case of multiple hereditary exostosis in which both sessile and pedunculated osteochondromas were present. A well defined sessile osteochondroma was the cause of a firm swelling in the right upper arm in this patient. The patient was advised to have 2 yearly plain x-ray of his lesions once every 2 years in view of development of any complication.*

**KEY WORDS:-** Exostosis, Child, Diaphyseal Aclasia

**INTRODUCTION**

Hereditary multiple exostosis is an autosomal dominant condition, characterized by multiple exostosis, usually seen in the long bones. There are a few reported complications, including popliteal aneurysm, haemarthrosis, central or peripheral nerve compression, and urinary obstruction. The autosomally dominant hereditary disease with great individual expression is the result of dysplasia of the peripheral growth plate.<sup>1</sup>

**CASE REPORT**

An 11 years old boy presented with pain in both upper arms and both knees for an year. He was in good general health and there was no history of trauma, but his father was concerned about increasing deformity of the child's knees and the gradual increase in size of the swelling in his upper right arm. On examination, there was a fixed bony outgrowth from the upper end of right humerus. There was no deformity or swelling of the fingers. Movements at the shoulder, hip and knee were within normal limits and there was no neurovascular problem. The child had swelling over the right upper arm (figure 1) and knees (figure 2). The x-ray of the knees revealed bony outgrowths from the lower femoral metaphyses mainly on the medial aspect (figure 3). Chest x-ray revealed bilateral osseous outgrowths from the proximal humeral metaphyses. The clinical presentation and the radiological findings were typical of osteochondromatosis, also known as hereditary multiple exostoses, diaphyseal aclasia, and metaphyseal aclasia. The disease was differentiated from solitary osteochondroma, myositis ossificans and multiple enchondromatosis through detailed examination of the plain films of knees and arms. The father of the child was advised to have regular radiological survey of these lesions once every two years

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Figure 1: Child with right sided firm upper arm swelling

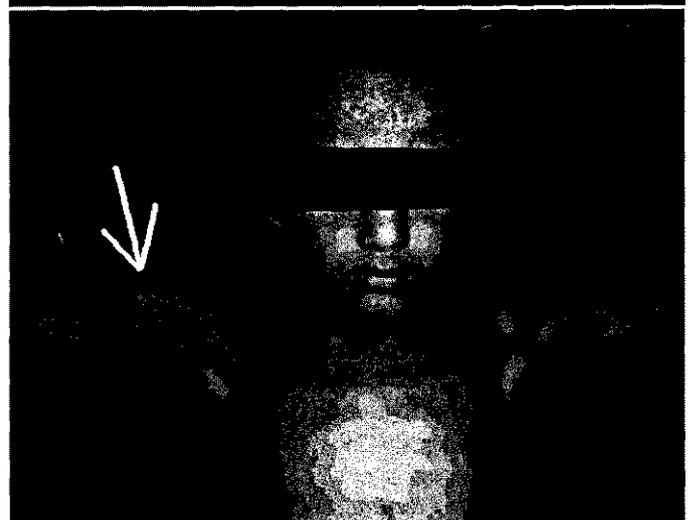
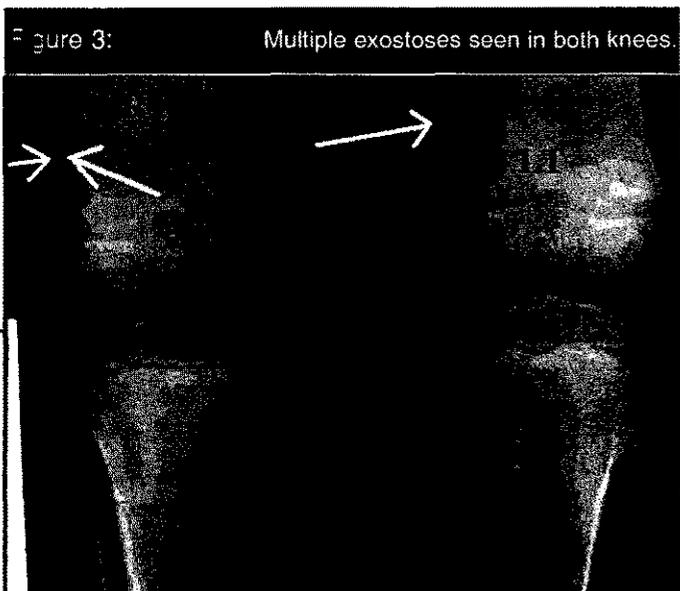


Figure 2 A moderately expansile lytic lesion is seen in the proximal metadiaphysis of rightt humerus .A small osteochondroma is also seen in the left upper arm.





#### DISCUSSION

Osteochondroma is a benign developmental growth defect involving the metaphyseal area of long bones, producing a bony outgrowth with a cartilage cap. It is the commonest benign bone tumour<sup>2</sup>. Osteochondromatosis has a marked hereditary tendency with autosomal dominant inheritance<sup>3</sup>. The penetrance is almost 100% by the age of 12 years<sup>4</sup>. In this case, both the boy and his father had multiple osteochondroma. This disorder is usually detected in early childhood around the age of 8-10 years. Long bones are most commonly involved. The majority of patients are asymptomatic and present with fixed bony lumps around the joints. The tumour grows with the growth of the patient and any increase in size of the lesion after skeletal maturity is suggestive of possible malignant transformation<sup>5</sup>.

Osteochondroma has typical radiographic features. The growth may be sessile or pedunculated. Characteristically, the cortex of the lesion is continuous with the cortex of the host bone. The actual size of the growth is greater than the radiological size because of the cartilage cap over the bony outgrowth. The bone harboring the tumour may be

shortened, causing deformity or limb length discrepancy.<sup>2</sup> If the tumour is symptomatic it should be excised. Excision is done through the base of the tumour along with the cartilage and the perichondrium. The chances of recurrence are greater if the perichondrium is removed incompletely. The exact figure for malignant transformation of the growth is not known but figures usually quoted are 1% for solitary lesions and 6% for multiple lesions<sup>4</sup>.

Neurological symptoms may be produced by mechanical pressure, especially in vertebral lesions. Rarely, the osteochondroma may become painful because of fracture of the stalk. Malignant transformation to chondrosarcoma is possible, although rare. Surgical treatment is indicated if the tumour is symptomatic or if there is suspicion of malignancy. The relative frequency of chondrosarcoma is greater in central lesions involving the pelvis, shoulder girdle, or spine<sup>4</sup>. Malignant transformation should also be suspected if the lesion suddenly becomes symptomatic or begins to grow rapidly. If there is any suspicion of malignancy, the lesion should be excised. Periodic control of patients with pelvic osteochondromas is advised, preferably once every two years.

#### REFERENCES:

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