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EDITOR'S NOTE

Postgraduate Medical Education	Syeda Kausar Ali	1
Role of CPSP		

ORIGINAL ARTICLES

Hydatid disease of liver: A ten years experience	Abdul Sattar Memon	2
A study of vesico - intestinal fistulae.	Saifal Khan Turk	5
Prostate cancer in rural Sindh: A six year clinicopathological experience	Abdul Rahim Siyal	10
Transtibial and transfemoral levels of amputation: Effects on prosthetic fitting and locomotion	Abdul Moeed Kazi	13
Coronary Artery Bypass Grafting in patients with severe left ventricular dysfunction	Arif-ur-Rehman Khan	17
Detection of rotaviruses from diarrheal stool specimens	Yasmeen Shah	20

SPECIAL COMMUNICATION

The Internet: Modern day Lingua Franca. An introduction for health care professionals	Naseem Ahmed	23
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REGISTRAR'S NOTE

Suture Materials	Anila Kapadia	26
------------------	---------------	----

CASE REPORTS

Postappendicectomy intestinal obstruction due to Meckel's diverticulum with a band	M. Yaseen Anwar	30
Penile agenesis	Jamshed Akhtar	32
Paracetamol toxicity	Ghulam Ali	34
Herniation through Iliac crest bone graft donor site.	Anisuddin Bhatti	37

ROLE OF COLLEGE OF PHYSICIANS & SURGEONS PAKISTAN IN POSTGRADUATE MEDICAL EDUCATION

With the introduction of new technologies in health care and social benefits associated with higher qualifications, a large number of medical graduates are undertaking postgraduate medical education. The need for postgraduate training is also immense because limited clinical experience is gained during undergraduate medical education as well as house job. This limited clinical experience can be attributed to an improper student / house officer to patient ratio, as well as absence of a structured training program for them.

Postgraduate Medical Education in Pakistan started around 1950 when the Punjab University started diplomas in ten specialties. In 1959 a symposium on postgraduate medical education was held, which led to the formation of the "National Reform Commission". The College of Physicians & Surgeons Pakistan was established in 1962 through an act of Parliament. It was founded by 50 fellows, who were all British trained. The first FCPS Part-I examination was held in 1965 in which 12 candidates appeared and two passed. The first FCPS Part-II examination was held in 1967 in which two candidates passed. To-date the College has produced 6944 specialists in various disciplines of medicine, who comprise almost 76% of the consultants presently registered with Pakistan Medical & Dental Council. This number of specialists, although very large, is still too small for our ever-increasing population. To make the maximum use of available specialists, it is important to have good training programs, which are conducive to producing competent and safe specialists.

The overall aim of the postgraduate medical training is to help the doctor:

- Acquire wider clinical experience of patients and their illnesses.
- Enhance his competency in clinical skills and judgement capabilities in problem solving, decision making and the related skills of interviewing, physical examination, investigations and clinical management.
- Acquire the ability to relate to patients in a way, which creates open communication, trust and confidence. This includes an ability to listen and understand the personal and social factors which contribute to an illness and thus to appreciate its meaning for the patient and its consequences.
- Review in the light of growing clinical experience knowledge and attitudes already acquired at undergraduate level.
- Acquire knowledge and skills in those aspects of his speciality which assume full meaning only when the trainee has begun to participate with some responsibility to the care of patients.

The CPSP presently awards Fellowships in 42 disciplines and Membership in 20. It is the responsibility of the College to take steps which ensure that trainees are equipped with knowledge and skills required to face new challenges ahead. The growth in number of training units during the last year is phenomenal; the College has recognized a total of 102 institutions with 854 training units. It is a well known fact that successful training programs require trainers who are both qualified and committed. At present 1284 supervisors are looking after the CPSP training programs. Commitment of a medical teacher to the educational task may be more difficult to define, but has commonly been described in quantitative term as a full time teaching faculty, but it is quite different from qualitative commitment. This again requires a full time core of teaching staff large enough to allow each teacher adequate time for trainee contact.

The key elements in any training are the trainee, trainer and the program. It is imperative that the training program should be reviewed and revised according to its objectives and implemented fully. This needs a committed and dedicated trainer who is ready to supervise and advise the trainee, as well as an enlightened trainee aware of the demands of his training. Some other issues which of concern postgraduate medical education and training in Pakistan include the training of trainers in supervising training programs and providing effective feedback to trainees, which has to be more extensive so that the role of supervisor encompasses that of mentor. Although there is a greater realization now in terms of learning objectives, problem solving approaches and community oriented medical education, which were literally unheard of three decades earlier, this aspect of training has been left neglected and trainees are not given appropriate and timely feedback on their performance. Likewise, evaluation strategies have to be modified in such a way that a comprehensive evaluation of the trainee can be achieved. The College has already taken major steps in this direction by introducing OSCE and Structured Orals in addition to written examination and traditional long and short cases in order to evaluate a wider domain of competencies and to a large extent also eliminate bias.

However, there is still much to be done on ethical issues, clinical audit and multi professional education. With the help of a team of dedicated and committed teachers the College is striving its best to prepare specialists able to adapt to the ever-changing world of medicine. One can foresee that by the end of the first decade of new millenium, 95% of the specialists serving in Pakistan will be Members and Fellows of the College of Physicians & Surgeons Pakistan.

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Syeda Kausar Ali

HYDATID DISEASE OF LIVER: A TEN YEARS EXPERIENCE

ABDUL SATTAR MEMON, JAN MOHAMMAD MEMON, NIZAM MEMON

ABSTRACT:

Forty-eight patients underwent surgical treatment for hepatic Hydatid cyst during 10 year period from January 1986 to December 1995. There were 15 male and 33 female patients; their ages ranged from 21 to 65 years, (mean - 46 years). Excision of the cyst was the commonest surgical procedure performed but external drainage and omentoplasty were also found simple, safe and effective procedures with minimum complications.

KEY WORDS: Hydatid disease liver.

INTRODUCTION

Hydatid cyst disease is most commonly caused by the larvae of tape worm echinococcus granulosus^{1,2}. Liver is the commonest site in man (70%)^{2,4}. It causes major health and economic problems in Mediterranean countries³. Dogs are definite while sheep are intermediate hosts. Man is infected incidentally following ingestion of eggs either from direct contact with dogs or from raw vegetables contaminated by infested dog's faeces.

The cyst provokes a foreign body reaction which leads to formation of dense fibrous, pericystic wall which is continuous with the normal host tissue and therefore there is no cleavage through which it can be easily removed. The endocyst is freely separable from ectocyst and therefore detached easily at operation.

Hepatic hydatid disease may remain asymptomatic and detected incidentally^{4,5,6} or may present as mass, pain, chills and fever, jaundice, weight loss and anorexia.

The different diagnostic tools for Hydatid disease include, ultrasonography, C.T. scan and serology. The most specific investigation is an immuno electrophoretic test. This test may be helpful in the diagnosis of recurrence. Compliment fixation test has also similar false negative limitation⁶. The different options for treating hydatid

disease include surgery, chemotherapy and percutaneous aspiration. There are various surgical methods for treatment of hydatid disease of the liver.

PATIENTS AND METHODS

Forty-eight (15 male and 33 female) patients of hydatid disease liver, admitted in Surgical Unit-I, L.M.C.H., Hyderabad / Jamshoro from January 1986 to December, 1995, who underwent surgery for the disease, were included in this study. Age ranged from 21 to 65 years with mean age of 46 years (Table-I).

TABLE-I		AGE DISTRIBUTION
Range	No of Patients	%
21 - 30 years	03	6.3%
31 - 40 years	14	29.2%
41 - 50 years	18	37.5%
51 - 60 years	10	20.8%
61 - 70 years	03	6.3%
Total	48	100%

Pain and mass were the most common presenting features. Patients suffering from urticaria were 6.25%. weight loss and anorexia were present in 4.16% and 5.25% cases respectively. Chills and fever were the other presenting features (Table-II).

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TABLE-II **CLINICAL MANIFESTATIONS**

Presenting	No of Patients	%
Abdominal mass	25	45.8
Abdominal pain	14	29.2
Urticaria	03	37.5
Anorexia	03	20.8
Weight loss	02	6.3
Chills and fever	04	6.3

Abdominal ultrasound was performed in all cases. Size of cysts ranged from 6cm to 30cm. Six patients had cyst in the left lobe of liver and 2 patients had cyst in both the lobes. One had cirrhosis and 3 had recurrence.

Eosinophilia was positive in 50% of the cases. Casoni's test was positive in 62.5% while C.F.T. was positive in 79.1% of cases.

All the 48 patients had laparotomy, 20% hypertonic saline was used as scolical agent. After excision of the cyst, cavities were drained with external tubes. Omentoplasty was performed in 8 cases.

Wound infection occurred in 10 cases. Five had biliary leak for 2 to 4 weeks. One patient developed hepatorenal failure, 3 patients had chest problem and two patients had recurrence after two years.

DISCUSSION

Hydatid disease is endemic in South America, South Africa, Soviet Union and Mediterranean countries³. They are less common than the primary liver cysts^{5,6}. Untreated hydatid cysts may lead to complications such as infection,^{13,14,15} rupture,^{8,9,10} anaphylactic reaction, obstructive jaundice and liver cirrhosis, which may be life threatening^{3,8,10}.

Ultrasound examination picks up almost all cases of hydatid cyst in the liver; however it is difficult to differentiate from simple primary cyst of the liver. It is also difficult to differentiate infected hydatid cyst from pyogenic liver abscess as the clinical features are similar but finding of daughter cysts on ultrasound, positive serology for hydatid and C.T. scan are major tests for differentiation^{10,11,12}. It is essential to have clear diagnosis before attempting needle aspiration for liver abscess or using medical therapy in a case of liver abscess or non-parasitic cyst^{13,14}.

Surgery is the main modality of treatment of hydatid disease. Although radical procedures like partial hepatectomy, wedge resection and cystopericystectomy have been claimed to have low recurrence rates¹⁵ but there is significant bleeding and risk of damage to major hepatic veins adjacent to the cyst wall and is not recommended¹⁶. Cystopericystectomy is claimed to be

justified for calcified large cyst to avoid dead space¹⁷. However the use of ultrasonic dissection have made this procedure safer¹⁰.

We removed all the parasitic elements, the laminated and germinal membranes, cyst fluid and daughter cyst. This was preceded by aspiration of fluid and injection of 20% saline. Scolical cholangitis has been claimed as a complication of scolical injection^{18,19}. We used 20% hypertonic saline in all the cases without any untoward effect and without any incidence of sclerosing cholangitis. We drained the residual cavity externally in 35 cases and closed the cavity in 5 cases. Omentoplasty was done in 8 cases.

Although marsupialization and external drainage are considered to have high incidence of sepsis and biliary fistula²⁰ but in our study we have used the procedure with low incidence of infection and biliary fistula.

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CORRIGENDUM

In the article "Open Technique of Laproscopic Procedures" published in JSP Vol. 3 No. 4 (Oct-Dec. 99).

"Abstract", line 1 and "Patients and Methods", line 2:-

For:- at B.V. Hospital, Bahawalpur

Read:- at Bahwalpur

A STUDY OF VESICO - INTESTINAL FISTULAE

SAIFAL KHAN TURK, ABDUL SATTAR MEMON, M.T. VANDAL, J.T. HILL.

ABSTRACT:

Vesico-intestinal fistula is a serious but infrequent problem, which comes under observation of urologists. It is a paradox that though mostly the primary pathology is intestinal in origin, more frequent presenting features are urinary. A retrospective study was conducted at Oldchurch Hospital, Romford, Essex and Liaquat Medical College Hospital, Hyderabad to observe the etiology, presentation, investigation and management of vesico-intestinal fistulae and compare the findings with the experience reported in literature. From January 1983 to July 1998, 23 patients with vesico-intestinal fistulae were managed. Age range was 55 to 81 years with male to female ratio 1.3.1. Except one all had surgical intervention. Vesico-colic was the commonest (87%) site of fistulae and 47.8% of fistulae were caused by diverticular disease of the sigmoid colon. Barium studies, Intravenous Urography (IVU) and cystoscopy demonstrated fistulae in 8 out of 20 (40%) patients. Overall treatment was individualized; 40% had one stage procedure. Patients with underlying malignancy had the worst prognosis.

We conclude that the treatment of each case must be individualized. Long term prognosis is mainly determined by underlying pathology.

KEY WORDS: *Vesico-intestinal fistulae, etiology, carcinoma.*

INTRODUCTION:

The first case report of vesico-intestinal fistulae is a quotation by Rufus of Ephesus, from Praxagavas, who in the second century described a patient whose urine was passed per rectum¹. Vesico-colic fistulae was first described by Wagner in 1685². In 1859 Sidney Jones presented a case due to diverticulitis, to the Pathological Society of London³. There are isolated case reports throughout the centuries, but the first summary is that of Blanquinque in 1870 which was followed in 1888 by monograph by Cripps based on 63 cases. Pascal in 1900 surveyed the world literature from the earliest time collecting 292 cases. At the same time similar accounts were published by Parhan and Hume (1909), Sutton (1921), Kellog (1928), Peters (1939), Mayo and Blunt (1950) and Pugh (1964)⁴.

We have analysed the etiology, presentation and management of 23 patients, who were treated at the Department of Urology, Oldchurch Hospital, Romford, Essex from 1983 to 1992 and Department of Surgery,

LMCH, Hyderabad from June 1996 to July, 1998 and compared the findings with the experience of more than 1000 cases reported in the English literature since 1954.

PATIENTS & METHODS

The clinical records of 23 patients who had been diagnosed having vesico-intestinal fistulae were studied. The age distribution ranged from 55 to 81 years, of which 19 patients were above 60 years. Male to female ratio was 1.3.1. Sites of fistulae were vesico-colic 20, vesico-rectal 2 and vesico-ileal one.

RESULTS

Two of the vesico-colic fistulae were complex as vesico-colo-entero-caecal and vesico-colo-cutaneous. One of the vesico rectal fistulae was complex with synchronous vesico-vaginal and vesico-cutaneous fistulae.

All fistulae due to diverticular disease and carcinoma of the sigmoid colon were vesico-colic except one vesico-colo-cutaneous due to carcinoma of the sigmoid colon. One patient with T4 carcinoma prostrate developed a

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Etiology	Total Number	%	ETIOLOGY	
			Male	Female
Diverticular Disease	11	47.8	6	5
Carcinoma sigmoid colon	07	30.4	5	2
Crohn's Disease	01	4.3	0	1
Radiotherapy	02	8.6	1	1
Carcinoma prostate + radiotherapy	01	4.3	1	0
Carcinoma cervix + radiotherapy	01	4.3	0	1
Total	23		13	10

Symptom / Sign	Number of Patients	CLINICAL PRESENTATION	
		Percentage	
Pneumaturia	14	60.8	
Faecaluria	10	43.4	
Frequency of micturition	09	39.1	
Dysuria	09	39.1	
Abdominal pain	10	43.4	
Lower abdominal mass	08	34.7	
Urgency	06	26	
Incontinence of urine	05	21.7	
Gross haematuria	05	21.7	
Acute retention of urine	04	17.3	
Bleeding per rectum	04	17.3	
Septicaemia	03	13	
Weight loss	03	13	
Nocturia	02	8.6	
Poor stream	02	8.6	
Constipation	03	13	
Intestinal obstruction	02	8.6	
Urethral discharge	01	4.3	
Diarrhoea	01	4.3	

vesico-rectal fistulae, following radiotherapy. A second vesico-rectal fistulae was due to Crohn's disease. One patient with advanced carcinoma of the cervix developed vesico-colic fistulae following radiotherapy (Table-I).

Radiation induced fistulae were: vesico ileal in a patient with carcinoma of cervix treated 15 years earlier with iridium implants and vesico-colo ileo-caecal fistulae in a patient with T₂ transitional cell carcinoma of the bladder treated with radical radiotherapy (external radiation) 14 months before the onset of faecaluria. In both cases of radiation induced fistulae there was no gross or microscopic evidence of recurrent disease.

More frequently the presenting symptoms were urinary (Table-II). It was unusual for patients to present with symptoms of bowel disorder. Persistent or recurrent attacks of dysuria despite medical treatment were the

main presentation. On direct questioning pneumaturia, usually at the end of urinary stream, was the commonest symptoms.

Investigations and records of 19 patient's mid stream urine (MSU), or catheter specimen of urine were available. Cultures were positive in 17 patients (89%) with mixed growth in 8 patients (42%). As might be expected bowel organisms were found in all infected urines, predominantly, *E. coli*. and *streptococcus faecalis*. Blood urea and serum creatinine were normal except in two cases, of advanced carcinoma of the cervix and prostate infiltrating both ureters. Haemoglobin was less than 10 grams %.

Per rectal examination confirmed advanced carcinoma of the prostate in one patient. Per vaginal examination revealed advanced carcinoma of the cervix in one patient. On bimanual pelvic examination a mass was palpable in 8 cases (34.7%). Sigmoidoscopy confirmed Crohn's proctitis in one patient and flexible sigmoidoscopy excluded malignancy of sigmoid colon in one patient with suspicious barium enema findings.

Plain x-ray abdomen, cystogram and ultrasound abdomen were not of great help. IVU was performed in 14 patients, which demonstrated fistulae in two patients (14.2%), and abnormalities other than fistulae in 3 patients (1 patient with non functioning right kidney, one with bilateral hydronephrosis and one with filling defect in the bladder). Eleven patients had barium enema and one had barium follow through. A fistulae was demonstrated in 3 patients (two vesico-colic and one vesico-ileal). Barium studies were carried out to show the basic underlying pathology as well as to demonstrate the fistulae.

Three patients had C.T. scan. A fistulae was demonstrated in one patient and tumour in another (carcinoma sigmoid colon invading the wall of the bladder). Technetium^{99m} bone scintiscan was done in one patient with incidental carcinoma of prostate with post TURP (transurethral resection of the prostate) faecaluria. Bone scan confirmed no metastases but increased isotope uptake throughout large bowel suggestive of vesico colic fistulae, which on exploration was found to be due to synchronous carcinoma of the sigmoid colon rather than due to carcinoma of the prostate.

Twelve patients had examination under anaesthesia (EUA) and cystoscopy. EUA confirmed pelvic mass in 7 patients (58%). At cystoscopy fistulae were visualised in 4 patients (33%), in relation to dome in 3 and in one case below the left ureteric orifice. Cystoscopy was abnormal in all cases and findings apart from fistulae, were foul smelling urine, debris in the bladder, faeculent fluid in the

bladder, irrigation fluid running per rectum, oedematous bladder mucosa, focal cystitis, generalised cystitis and solid tumour of left lateral wall. All cases had a biopsy of inflamed or suspicious area, which was reported as acute or acute on chronic inflammation in all cases, except in one case as adenocarcinoma which on exploration was found to be a carcinoma of the sigmoid colon.

MANAGEMENT

All patients were individually assessed and operated except one (Table-III). An 81 years old man with a vesico colic fistulae due to diverticular disease was not operated because of recent myocardial infarction and severe left ventricular failure, who was unfit for surgical intervention. Four patients had colostomy only, because of either advanced pelvic malignancy, or poor general condition, or high risk for prolonged anaesthesia.

Ten patients had one stage procedure, they had reasonably good general condition and resectable primary lesion. Eight patients with vesico-colic fistulae had sigmoid colectomy, colorectal anastomosis and bladder repair. The patient with carcinoma of the sigmoid colon had partial cystectomy in continuity with the primary tumour resection and the patients with diverticular disease had excision of a bladder cuff and repair.

One patient of ca cervix with radiation induced vesico-ileal fistulae had ileal resection, anastomosis, bladder cuff excision and repair. One patient with Crohn's proctocolitis and complex vesico-rectal, recto-vaginal and recto-cutaneous fistulae had abdominoperineal excision with sigmoid end colostomy and bladder repair.

Synchronous procedures done during the one stage surgeries were: an ileal conduit for carcinoma of the cervix with bilateral hydronephrosis, a bilateral ureteric reimplantation for carcinoma of the sigmoid infiltrating

ureters and bladder base had partial cystectomy and ureteric reimplantation, a caecostomy which closed spontaneously in 10 day. Two patients had hysterectomy and bilateral salpingo-oophorectomy and one patient had right above knee amputation for ischaemic right leg.

The time interval between clinical diagnosis and operation was a day to eight weeks. The overall stay was 13 days except two patients who stayed upto 5 weeks. One stage procedure was associated with low morbidity and mortality (one ureteric leak, two deep vein thrombosis and one death due to pseudomembranous colitis).

Two patients had two stage procedure, preliminary colostomy followed by resection of primary pathology, anastomosis, closure of colostomy and bladder repair. Two patients had Hartmann's procedure i.e. sigmoid colectomy, left terminal colostomy and closure of rectal stump. A 55 years old lady died on 15th postoperative day due to disseminated disease and a 71 year old man developed postoperative pericostomy abscess and abdominal wound dehiscence. One 59 year old man who had multiple procedures had preoperative total parenteral nutrition for 8 weeks followed by a second laparotomy plus ileal resection plus anastomosis and bilateral cutaneous ureterostomy for tumour recurrence in the pelvis, died on the seventh postoperative day.

Apart from age, general condition of patients and concomitant medical conditions, the prognosis was mainly determined by the underlying pathology. In the present series patients with carcinoma had poor prognosis, 9 out of 11 (82%) died within 22 months due to disseminated malignancy. Patients with radiation enteritis had greater morbidity with prolonged hospital stay. (Table-IV).

TABLE-III **MANAGEMENT**

Treatment	Total No.	Diver-ticular disease	Ca sig-moid	Crohn's disease	Radiotherapy		
					Ca bladder	Ca prostate	Ca Cervix
No surgery	1	1	0	0	0	0	0
Colostomy alone	3	1	2	0	0	1	0
Colostomy + excision of fistulae	1	0	1	0	0	0	0
One stage procedure (colonic resection)	10	7	1	1	0	0	1
Two stage procedure (colonic resection + colostomy)	2	1	1	0	0	0	0
Hartmann's procedure	2	1	0	0	0	0	1
Resection anastomosis + covering colostomy	2	0	2	0	0	0	0
Multiple procedure	1	0	0	0	1	0	0

TABLE-IV **RELATION OF OUTCOME TO CAUSE OF FISTULAE**

Cause of fistulae	No. of patients	Status at follow-up	
		Alive	Dead
Diverticulitis	11	8	3
Crohn's disease	1	1	0
Carcinoma sigmoid colon	7	1	6
Carcinoma cervix	2	1	1
Carcinoma prostate	1	0	1
Carcinoma Urinary bladder	1	0	1

DISCUSSION

Average hospital can expect two to three cases of vesico-enteric fistulae for every 10,000 admissions⁵. In the present series on an average 2.33 cases were managed per year. Vesico-enteric fistulae can occur at any level from duodenum to the rectum and from renal pelvis to urethra⁶ but the vast majority involve the

sigmoid colon or terminal ileum with bladder or prostatic urethra. In the present series 10 out of 23 cases were vesico-colic fistulae. Vesico-enteric fistulae are generally located at the vesico-colic level and in most cases are secondary to bowel conditions. Urological origin is found in fewer than 2% of cases⁷. Diverticulitis had long been identified as the most common underlying etiology with a reported range of 36 to 85 percent⁸. In the present series 47.8% of fistulae were due to diverticular disease. In literature 0.6% patients with colonic cancer have fistulae when first seen^{4,9} and 14-24% of cases of vesico-enteric fistulae are due to malignant tumours¹⁰. In the present series 30.4% of fistulae were due to carcinoma of the sigmoid colon.

Advances in diagnosis and therapy over the past century have considerably altered the aetiology of vesico-intestinal fistulae. Once common diseases such as typhoid, tuberculosis, amoebiasis, syphilis actinomycosis have become rare and now the most cases are diverticulitis or malignancy as the underlying cause^{3,11,12}.

In literature positive urine culture is reported in 78 to 90% of cases with mixed growth in 58-65%. In the present series urine culture was positive in 89.4% with mixed growth in 42%. Demonstration of fistulous track has proved unusually difficult with conventional radiographic methods¹³. Plain abdominal X-ray in an erect lateral view, may demonstrate a fluid level in the urinary bladder in 8-29%¹⁴.

IVU has been recommended in preoperative assessment because of the close proximity of fistulae to ureter in some cases¹⁵ and it is important to decide whether obstructive uropathy is present or not. IVU may be normal in 65% cases and will delineate fistulae in only 8% cases¹⁴. One may note extrinsic pressure on the bladder in the prodromal stage, the so called "Herald Sign"¹⁶. In the present series IVU was normal in 64% cases, and fistulae was demonstrated in 14.2% cases.

Cystography has been disappointing in large bowel fistulae and this is said to be due to higher colonic pressure giving rise to unidirectional fistulae. Retrograde or micturating cystography may double the success rate¹⁷. In literature cystography is diagnostic in up to 27% cases but is often not performed¹⁴. In the present series only 2 patients had cystography which failed to demonstrate the fistulae. Small bowel and caecal pathologies give much higher degrees of success in cystography because of low pressure¹⁸. In one study cystography demonstrated distinctively biconvex triangular defect "bee hive" ending at a clearly defined point which is invariably associated with the vesical end of the fistulous track at laparotomy¹⁹.

According to Goldman and associates²⁰ the best radiological test is C.T. scan. Using 1-cm intervals from below the base of the bladder to a level superior to the dome after ingestion or rectal instillation of contrast medium, they were able to detect all 20 fistulae. Only in 20% cases contrast was demonstrated within the bladder. Fistulous track was demonstrated in all the cases by barium evacuation method²¹.

As laparotomy is indicated in all but a few cases, further elaborate investigations may be avoided. Frequently an operation must be undertaken on the basis of clinical suspicion and suggestive radiological evidence without definite proof of a vesico-intestinal fistula²².

Permanent spontaneous closure of vesico-enteric fistulae is rare, being most likely in the prostatic-rectal or vesico-rectal examples of traumatic origin²³. There appear to be few recorded cases of spontaneous closure even in the inflammatory cases. There is still some debate whether all fistulae should be treated surgically, as in the very old and infirm, major procedures are sometimes not justified. Symptoms may be considerably reduced by the use of antibiotics²⁴.

Simple diversion of the faecal stream is a reasonable palliative procedure in cases of advanced neoplasm with some expectation of life. As in the present series four patients with carcinoma of sigmoid colon had colostomy, both died within 8 months. Local measures such as division of fistulous track with oversewing of the colon and bladder with or without interposition of omentum²⁵ is not recommended as recurrence is common. Colostomy and simple repair of fistulae were practised by Gray Turner and Rutherford Morrison. This involved separation of the colon from the bladder and repair of the defects which were covered with omentum. This procedure is open to some objections as colostomy alone and anything short of resection frequently fails to cure the fistulae as it does not remove the cause²³. In the present series 50% of patients had one stage procedure. The data from this and other studies would indicate that one stage resection of the fistulae and the disease with reanastomosis of bowel can often be performed.

Vesico-enteric fistulae due to radiation is an entirely different condition, which becomes apparent during follow up of pelvic cancer particularly carcinoma of cervix or bladder. Although straight forward fistulae between bowel and bladder are seen, it is quite common for them to be complicated by vaginal fistulae. The difficulty with these patients is to know whether the fistulae is due to recurrent pelvic disease or radiation²⁴. In the latter case it may be possible to resect the sigmoid colon and rectum either partially or wholly and carry out a low colo-rectal or colo anal anastomosis. However the tissues heal poorly after

irradiation and in many cases even palliation is difficult. Vesico-intestinal fistulae are very distressing for the patient and diagnosis is usually based on clinical presentation and conventional radiographic methods. Each case must be individualised and the majority need surgical intervention.

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XIII ASIA PACIFIC FEDERATION CONGRESS DHAKA, BANGLADESH

The International College of Surgeons, Bangladesh Section is organizing XIII Asia Pacific Federation Congress at Dhaka from 26th to 29th November 1999. The Theme of the Congress is "Surgery for the Developing countries in the next Millennium".

Though enormous development of surgery and its allied sciences has been achieved in this century, their fruits are yet to reach majority of people in the developing world. While the world is making great strides in almost all specialities of medical science, we are still required to ensure that surgery shall be comfortable, safe, ethical and easily acceptable to its consumers.

These are some of the aspects to be covered during the Congress. Interested surgeons may contact Congress Secretariat, Department of Paediatric Surgery, Bangladesh Sheikh Mujib Medical University, Shahbag, Dhaka, 10000 Bangladesh. OR I.C.S. (Pakistan Chapter) Baqai Postgraduate Medical Institute, III C, I/12 Nazimabad, Karachi.

PROSTATE CANCER IN RURAL SINDH: A SIX YEAR CLINICOPATHOLOGICAL EXPERIENCE

ABDUL RAHIM SIYAL, SHER MUHAMMAD SHAIKH, ABDUL RASHEED SHAIKH,

ABDUL WAHEED SURAHIO

ABSTRACT:

Prostate cancer is a major source of morbidity and mortality the world over¹. The purpose of present study was to evaluate the clinicopathological pattern of prostate cancer in rural Sindh, Pakistan. The study was conducted over 6 years period from January 1993 to December 1998. Overall prevalence of malignancy in the prostatectomy specimens was 12.65 %. Total cases of prostate cancer were 112. Average and median ages were 62.98 and 62 years respectively. Peak age group was the sixth decade. The most common presenting complaints were urinary retention (66.07 %), prostatism (38.39 %) and haematuria (17.85 %). Majority of the patients (58.04 %) showed moderate enlargement of the gland. The most common surgical procedure was transvesical prostatectomy (62.51 %). The most common histological variants were small acinar (52.7 %) and solid variant (21.42 %). One third of tumours were of histological grade I and the remaining were grade II and III. Pattern in our study was not much different from that of other studies. However our patients were about a decade younger and majority of the tumours were in higher histological grades as compared to the West.

KEY WORDS: Pattern, clinicopathological, cancer, prostate.

INTRODUCTION:

Prostate cancer has variable incidence in different countries, being highest in Sweden and lowest in Singapore². In Europe and United States, prostate cancer is the second leading cause of male death from malignant disease. Autopsy studies have revealed that approximately 30 % of men over the age of 50 years have identifiable prostate cancer³. It varies from an indolent microscopic focal lesion, often discovered by chance in tissue removed by surgery for benign prostatic hyperplasia to overt, infiltrating lesion^{4,5}.

PURPOSE OF STUDY

The purpose of present study was to analyse prostate cancer according to its clinicopathological status in patients of rural Sindh.

MATERIALS AND METHODS

The present prospective study was carried out in the Department of Pathology in collaboration with the Department of Urology, Chandka Medical College (C.M.C) Larkana, Sindh. This department is the biggest of its kind in the region and draws maximum number of

biopsy specimens of patients belonging to northern Sindh and adjoining areas of Balochistan. All prostatectomy specimens which were received between January 1993 and December 1998 were fixed in 10% formalin and were processed routinely for preparation of haematoxylin and eosin (H & E) stained sections. Cases of malignancy were selected and included in the study. Diagnosis and histological grading of carcinoma prostate were made on light microscopic examination according to criteria laid down by WHO⁶. Presenting complaints and findings on per rectal (PR) examination were recorded in the Department of Urology. The cases were analyzed according to age, clinical features, surgical procedure, size of the tumours and histopathological findings.

RESULTS

Of a total of 885 biopsy specimens studied, malignancy was diagnosed in 112 (12.65%) cases (Table-I).

Ages of cancer patients ranged from 45 to 95 years. The average and median ages were 62.98 and 62 years respectively. The most commonly involved age groups were fifth and sixth decades of life with peak incidence in the latter (Table-II).

The most common complaints were acute or intermittent

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TABLE-I OVER ALL DISTRIBUTION OF PROSTECTOMY SPECIMENS ACCORDING TO HISTOLOGICAL DIAGNOSIS

Diagnosis	No.	%
Hyperplasia	692	78.23
Carcinoma Prostate	112	12.65
Chronic Prostatitis	050	05.64
Acute Prostatitis	006	00.67
Chronic granulomatous Prostatitis	003	00.33
Tissue Autolysed	011	01.24
Tissue inadequate for diagnosis	011	01.24
	885	100

TABLE-II DISTRIBUTION OF CANCER CASES ACCORDING TO AGE GROUPS (YEARS).

	41-50	51-60	61-70	71-80	81+
No	16	42	45	06	3
(%)	(14.28)	(37.5)	(40.2)	(5.35)	(2.67)

TABLE-III COMMON PRESENTING COMPLAINTS

Presenting	No.	%
Urinary Retention	74	66.07
Prostatism	43	38.39
Haematuria	20	17.85
Burning micturition	17	15.17
Pain hypogastrium	11	09.82
Backache	10	08.92
Weakness of Lower limbs	08	07.14

TABLE-IV HISTOLOGICAL TYPE AND GRADE.

Type	I	II	III	No.
Microacinar	25	29	05	59
Large acinar	05	07	02	14
Solid variant	04	15	05	24
Gribriform	03	03	--	06
Transitional cell	01	01	02	04
Anaplastic	--	--	05	05
	38	55	19	112

retention of urine (66.07%), prostatism (38.39%) and haematuria (17.85%). Per-rectal examination revealed mild enlargement of the gland in 18 (16.07%) moderate in 65(58.04%) and marked enlargement in 29 (25.89%) cases. The two most common surgical procedures were transvesical prostatectomy (TVP) and transurethral removal of prostate (TURP) in 70 (62.51%) and 39 (34.82%) cases respectively. Trucut needle biopsy was

done in (2.67%). Maximum diameter of (TVP) specimens ranged from 2 to 12 cm with average of 5.09 cm. The total volume of aggregated pieces of TURP specimens ranged from 0.3 to 20 ml with average of 4.92ml. All specimens were firm on cutting and their cut surfaces were uniformly greyish white in colour.

Histological types and grades of the tumours are shown in (Table-IV).

The most common type was small acinar detected in 59(52.7%) followed by solid variant composed of cords and sheets in 24(21.42%) cases. About half (49.12%) of the tumours in our series were in grade II and the remaining half in grade I (33.92%) and grade III (16.96%).

DISCUSSION AND CONCLUSION

Prevalence of malignancy in prostatectomy specimens in our study (12.65 %) was higher than Saudi data⁷ but is very close to that reported from Faisalabad, Pakistan (11.6% and 12.0 %)^{8,9}. Median age (62 years) and peak age group (6th decade) of our patients are fairly well compared with other Pakistani studies⁸⁻¹⁰ but when compared with the West, our patients are about a decade younger than their European counterparts. This age discrepancy can be explained by risk factors such as increasing age and the increased intake of dietary fat^{1,7}. Probably most of our patients do not attain very old age due to overall less survival rate in a third world country like ours. And there is also a possibility that our patients are exposed to some risk factors likely of dietary origin such as high fat intake at an early age.

Most of our patients presented with urinary retention, prostatism and haematuria in descending order of frequency. Similar pattern is reported by Ahmed et al from Faisalabad⁸. Pattern of histological types and grades is also almost the same as reported by the above named authors in their study. But when compared to the West, cancer in our patients (66.08%) was in higher histological grades (II and III) than those of their Western counterparts (34.0%)¹¹.

We conclude that the clinicopathological status of carcinoma prostate in rural Sindh is not much different from that reported in other studies. However with regard to age and histological grades, tumour of our patients is different from their Western counterparts. Our people suffer from the disease about a decade earlier and their cancer is more frequently found in higher histological grades at the time of diagnosis. We are of the view that further studies should be conducted in the region in order to identify various risk factors of the disease such as increasing age, gonadal hormones, hereditary and familial factors, high fat diet, smoking, alcohol intake and vitamin D deficiency⁷. Moreover measures could be taken

to detect the malignancy at an early stage to decrease morbidity and mortality¹³.

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VTH INTERNATIONAL SURGICAL CONFERENCE OF SOCIETY OF SURGEONS OF NEPAL, KATHMANDUE, NEPAL.

The 5th International Surgical Conference of the Society of Surgeons of Nepal (SNN) is being held at Kathmandu from 23rd to 25th March, 2000. The Theme of the conference is "International Co-operation for Better Surgery". In the new millenium we need more ideas and expertise to develop the surgical specialities. The role of international cooperation is vital for which various exchange programmes, camps, workshops have to be held.

All Surgeons are invited to participate in this conference and take an active part in the scientific programme which will be organized during the 3-days event. Interested Surgeons may contact Organizing Secretary, Vth International Surgical Conference, Society of Surgeons of Nepal, GPO Box No. 8442, Kathmandu, Nepal.

TRANSTIBIAL AND TRANSFEMORAL LEVELS OF AMPUTATION : EFFECTS ON PROSTHETIC FITTING AND LOCOMOTION

ABDUL MOEED KAZI, ANISUDDIN BHATTI, NASIR A. MALIK, NABILA SOOMRO.

ABSTRACT:

This retrospective study has been conducted to evaluate the level of transibial and transfemoral amputation, their effects on prosthetic fitting and locomotion and to establish guidelines for correct levels. A total of 290 amputees were studied, including 20 bilateral. Two third (61.72%) of the amputees had below knee (B/K) amputations, 1/3 (32.4%) had above knee (A/K) amputation, a few (0.7.14%) had amputation of foot and disarticulations of ankle, knee and hip joints. Only 38.46% of A/K and 33.33% of B/K amputees had optimum level of amputations. Improper levels of amputation were either the result of ill-planned surgical procedure or were performed by junior members of the surgical teams. Patients must be adequately assessed before planning an amputation and good practice today is multi-disciplinary team approach for selection of level of amputation and rehabilitation.

KEY WORDS: Amputation, Stumps

INTRODUCTION

The main purpose of an amputation in lower limb is two folds, first to remove the diseased part and second to produce adequately shaped stump of correct length for suitable prosthetic limb fitting. The aim is to enable the amputee to return to the community to live socially acceptable, productive and independent life. The resultant stump must be strong, dynamic and function as a motor and sensory end organ "functioning as a foot like end organ with prosthesis serving as shoe on the foot"^{1,2,3}. The stump works as a non-ventilated enclosure (socket), an environment that produces friction, skin tension and perspiration. This necessitates good construction of stump and regular care so that it allows easy and successful prosthetic fitting providing balanced and effective muscular power for locomotion and propulsion of the prosthesis. A good stump should have a mobile skin cover with normal sensitivity, well-covered stump end with adequate muscle tissue, rasped and bevelled bone end, adequate stump length and no painful neuromas or scars. In developed countries with availability of total contact

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sockets and sophisticated fitting techniques for amputation through joint levels, level of amputation has become less important. However, in our situation such sophisticated technology, prosthesis parts and immediate post-surgical prosthetic fittings are hardly available and if available, are beyond the means of a common man due to high cost i.e. above Rs. 50,000/- per prosthesis, besides its effects on gait and energy expenditure. The level of amputation is determined primarily by surgical considerations, that is amputation through tissues that heal satisfactorily and at a level consistent with good surgical judgement¹. The purpose of this study is to evaluate the variation in length of stumps interrelation to optimum level required for transtibial and transfemoral amputee prosthesis.

MATERIAL AND METHODS

This retrospective study was conducted at the Department of Physical Medicine and Rehabilitation, with cooperation of Departments of Orthopaedic Surgery, JPMC, Karachi from January 1977 to December 1998. The study includes the measurements of lower limb stumps of amputees attending out patient department (OPD) during the said period and measurements of all the

available moulds and casts used and data available for prostheses fabrication during the period, to determine the level of stumps, patients who had immature, infected stumps and had significant contractures of joints (greater than 15 degrees) and stumps needing revision were excluded from the study. Length was measured from tibial plateau (joint level) to stump end to below knee stumps and for above knee measurement from groin (pubic tubercle) to stump end. Measurements for total length were carried out on patient's sound leg (from pubic tubercle to knee joint level) to detect gap between stump to joint level by subtracting length of A/K stump from sound leg measurements. The optimal level for below knee stump was 5 1/2 inches, whereas, for above knee level gap of 4 1/2 to 5 inches above knee joint level was considered as optimal level. For assessment the length of the amputation stump shorter than 4 inches in below knee amputation was considered too short and length greater than 6 inches too long. In above knee amputation, stump end to knee level gap greater than 5 inches was considered too short and stump, end to knee level gap smaller than 4 inches was considered too long (Table-I).

TABLE-I OPTIMUM LENGTH OF STUMPS.

Levels of amputation	Optimum length of stump required	Too short	Too long
Transtibial	5 1/2 inches from tibial plateau	Less than 4"	More than 6"
Transfemoral	Gap from tibial plateau to stump end 4 1/2 to 5"	Gap > 5"	Gap < 4"

Disarticulation at Hip, Knee and Ankle are always acceptable as such.

RESULTS

Out of 290 amputations of the lower extremities, 273 were below and above knee amputations. Five had knee disarticulation, seven had partial foot (Lisfane Chopart) amputation and one each had hip disarticulation and Syme's amputation (Table-II)

TABLE-II LEVELS OF AMPUTATIONS IN LOWER EXTREMITIES

Levels	Year 1997	Year 1998	Total	% Age
Hip disarticulations	01	—	01	0.34
Transfemoral	34	60	94	32.4
Knee disarticulations	04	01	05	1.72
Transtibial	92	37	179	61.72
Syme's	04	—	04	1.3
Partial foot	04	03	07	2.4

Single leg amputation n=270, Bilateral n=20, Toes amputation not included.

Age range of patients was between 05 to 65 years, majority were in middle age group. While 185 (63.7%) patients had amputations due to traumatic reasons, fifty nine (20.33%) amputations were due to diabetic gangrene and Burger's disease, 32 (11%) amputation due to malignancies and 14 (4.75%) were due to congenital deformities and severe Osteomyelitis (Table III).

TABLE-III CAUSES OF AMPUTATION IN LOWER EXTREMITY

Traumatic Causes	n=185	63.7 Percent
Road traffic accident	86	29.65
Railway accident	55	18.96
Firearm — bomb blast injuries	27	09.31
Industrial	17	05.86
Non-Traumatic Causes	n=105	36.3 Percent
Malignancies	32	11.00
Vascular gangrene	14	04.82
Diabetic gangrene	45	15.51
Congenital deformities	08	02.75
Osteomyelitis and Misc.	06	02.00

The stump length was an important factor for prosthesis fitting and locomotion only in cases of below knee and above knee amputations. The optimum sizes of stump in A/K amputations were 38.46%, similarly, below knee amputees with optimum size of stump were 33.33% whereas, all other 61.46% of A/K and 66.66% of all amputees had either too long or too short stumps for prosthetic fitting. They either needed additional suspensions or were not able to use prosthesis properly (Table IV).

TABLE-IV OPTIMUM AND IMPROPER LEVELS OF AMPUTATION

Above Knee amputation	n=094	Percent
Optimum size of stump	36	38.46
Too short stump	36	38.46
Too long stump	22	23.00
Below Knee Amputation	n=179	Percent
Optimum size of stump	59	33.33
Too short stump	79	44.44
Too long stump	39	22.20

DISCUSSION

Following an amputation, the amputee loses some physical function and has to cope with disturbance in

balance and coordination occurring due to loss of length, weight of limb and proprioception level. The physical functional loss increases proportionately with height of amputation, as length of stump (measured) by bone length affects lever control, amount of muscle tissue available for muscle control and amount of stump surface available for weight distribution, socket contact, proprioceptive awareness and comfort^{4,5}.

The 38% of (A/K) and 33.33% of B/K amputees in our study had stumps of optimum length whereas, all others (61.46%) of A/K and 66% of B/K were of either too short or too long stumps (Table IV), which were either due to amputation surgery done without planning or performed by junior surgeons or medical officers. The incorrect prosthetic leg length produces a vertical alignment error which effects horizontal alignment of pelvis that leads to gait deviation and increased energy expenditure.

Too short stump leads to fabrication of too long prosthesis. The short or stump length reduces stump leverage action with greater un lateral weight loss, more pronounced balance disturbances, increased prosthetic weight and more complicated prosthetic fitting^{6,7}. Too long stump leads to fabrication of too short prosthesis.

The two long amputation stump produces pronounced gait deviation, increased pelvic drop on affected side, increased energy expenditure on sound side and secondary low backache. Shorter prosthesis upto one centimetre, both in transtibial or transfemoral amputation are more acceptable to amputee as it helps while walking on rough surface and allows easy ground clearance during prosthetic swing phase. However, a shorter prosthesis of more than one centimetre results in undesirable prosthetic gait deviations on long term.

The problem of gait deviations, prosthetic weight, disturbances in balance and prosthetic fittings are significant in bilateral amputee. The amputee feels great hardship to adapt physically, emotionally and socially, needing prolonged and intensified rehabilitation period. Amputee has to accept lifestyle changes with adjustment to balance, strength, coordination and determination. The ability to be independent depends on health status, amputation level and whether the amputee was a prosthetic user prior to losing second leg⁸. The maintenance of balance becomes more difficult in cases of two unequal stump length and levels (combination of A/K and B/K levels), due to uneven body distribution (top heavy), variation in loss of proprioception that needs greater amount of energy for locomotion in case of higher levels⁶. The treatment aim in many elderly high level bilateral amputees should be at least wheel chair independence, as many of such elderly amputees have poor potential for amputation due to pre-existing

cardiovascular, or respiratory diseases and limitation of joint motion. Special consideration and maximum efforts are needed for rehabilitation of younger patients to their maximum functional capability or at least to their independent bed mobility, safe transfer and gait training. To accomplish these targets it needs prevention of contractures, strengthening upper extremity, trunk flexion and extension, sitting balance and transfer, donning two prosthesis and stump mobility strength and ability to stabilize a joint at any point within its range.

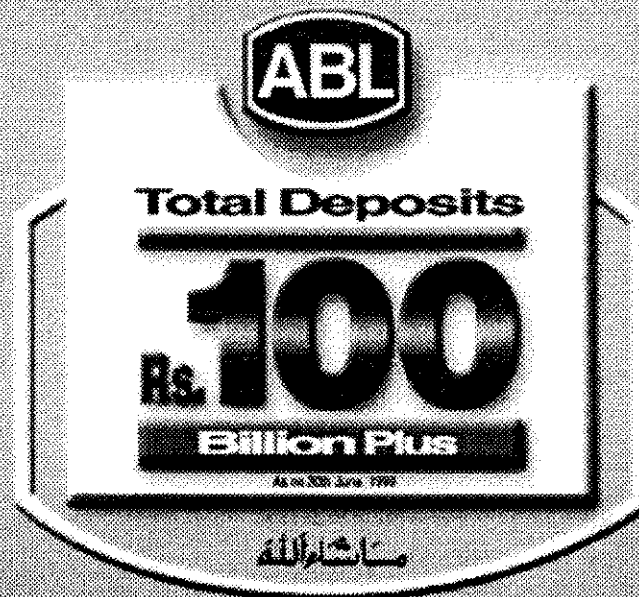
Various amputation levels present different functional problems to the amputee and prosthetist. Amputations performed through joint level (ankle or knee distarticulation) result in bulbous stumps. Only objection to these are flared stump ends and temporary dog ears. These bulbous end-bearing stumps are truly functional and contribute to stump socket comfort and preserving muscle balance¹⁰. These, in fact result in coordinated stump movement and good stump preoccupation that allow easier readjustment to balance and position of sense; therefore these are well recommended especially in elders. The plastic and reconstructive procedures like Myoplasty in transfemoral and transtibial amputation and osteoplasty (creating bone block between tips of tibia and fibular ends) in transtibial amputations improve muscle balance contractility, provide non painful and non sensitive scars and avoid soft tissue retraction. The stump length in transfemoral amputation significantly affects thigh - shank ratio and interferes biomechanically with gait cycle and prosthetic fitting. Too short stumps in transtibial amputation require additional suspension and are prone to flexion knee prosthesis. Utmost care should therefore be taken to conserve optimum length of stumps (Table-IV) in both transtibial; and transfemoral amputations to get best possible results with rehabilitation of an amputee. The amputation shall not be therefore considered as a simple procedure but shall be well planned and performed by an experienced surgeon. Today the multidisciplinary team approach is the practice in developed countries. The major objective is to coordinate and plan with care and treat medical, physical, psychological, social and vocational aspects of the amputee.

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CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH SEVERE LEFT VENTRICULAR DYSFUNCTION

ARIF-UR-REHMAN KHAN, ABDUL GHAFAR, M. REHMAN.

ABSTRACT:

Coronary artery bypass grafting (CABG) in patients with severe left ventricular dysfunction is associated with high morbidity and mortality. In this study we are reporting our experience with 54 patients of ischemic heart disease with severe left ventricular dysfunction, who underwent CABG surgery at our institute. In-hospital morbidity and mortality have been evaluated. Ninetytwo percent of the patients, who survived this high risk procedure, showed remarkable improvement in their functional class. The predictors of morbidity and mortality are: non-elective surgery, unstable angina, thin-walled dilated ventricles, thin diffusely diseased coronaries and associated illnesses like diabetes mellitus.

KEY WORDS: *Coronary Artery bypass grafting*

INTRODUCTION

CABG in patients with severe left ventricular dysfunction carries high mortality. Various authors have shown mortality figures between 8 to 36 percent^{1,2}. CABG surgery is being performed in Pakistan for the last 25 years or so, but scientifically analyzed data of various sub-groups is generally not available. We report our experience at National Institute of Cardiovascular Diseases, of CABG procedures performed on patients, whose left ventricular ejection fraction was 25 percent or less. The objective of this study was to evaluate the results after surgery in our patient population. We have also tried to identify various predictors of morbidity and mortality during short term follow up.

PATIENTS AND METHODS

It is a retrospective study. Records of all the patients who underwent CABG surgery during 1976-97 were studied. We identified 62 patients with poor left ventricular function. Their clinical data was collected for analysis. Eight cases were excluded whose data were incomplete. This patient population did not include those with associated ventricular aneurysms.

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The patients were admitted electively through out-door clinics or as an emergency through emergency department. After initial management and preliminary workup, they had echocardiography and angiography.

The procedure was performed through median sternotomy with standard aortocaval cannulation for extra corporeal circulation. Bubble oxygenators were used in most of the cases. Left ventricular vent was inserted through right upper pulmonary vein. Procedure was performed at moderate hypothermia, alongwith cold crystalloid cardioplegia or intermittent aortic cross clamp.

Post-operatively, these patients were electively ventilated. All patients were kept in the intensive care unit for at least 96 hours, before being shifted to the ward. All the patients were followed up in the outdoor department at weekly intervals.

RESULTS

We studied a total of 54 patients, 53 males and one female, age ranging from 42 to 67 years. Pre-operatively 51 patients presented with grade II-IV angina pectoris. Of these 51 patients, 11 were in grade IV angina, 27 in grade III and 13 in grade II. Exertional dyspnoea was a major symptom in 11 patients. Associated illnesses included diabetes mellitus in 12 patients, hypertension in 14 and

chronic obstructive airway disease in 2 patients. On echocardiography, 53 patients had an ejection fraction of 20-25% and one had an ejection fraction of 18%. End-diastolic left ventricular dimension was 55 mm in one patient. On angiography, all the patients had triple vessel disease. Breakup of this parameter showed left-main coronary artery obstruction in 8 patients, right coronary obstruction in 37 patients, LAD obstruction in all 54 patients and circumflex coronary obstruction in 43 patients. Cardiac catheterization revealed left-ventricular and diastolic pressure between 15-20 mm Hg in 14 patients, between 21-30 mm Hg in 27 patients and more than 30 mm of Hg in 13 patients.

Surgery was performed at moderate hypothermia and standard extra-corporeal circulation. Membrane oxygenator was used in 6 patients, while bubble oxygenator was used in rest of the 48 patients. All the patients received saphenous vein grafts. A total of 160 distal anastomosis were performed (average: 2.9 grafts per patient). Breakup of various vessels grafted is shown in (Table-I).

TABLE-I BREAKUP OF DISTAL ANASTOMOSIS PERFORMED ON VARIOUS CORONARIES

Vessel	No. of anastomosis
Left anterior descending	54
Diagonal branches	22
Obtuse marginal branches (single or multiple)	47
Right coronary / posterior descending	37
Total grafts	160

All the patients were weaned off extra-corporeal circulation with inotropic support. 41 patients required Dobutamine infusion, while 13 patients needed Adrenaline, as well. All the patients received sodium nitroprusside or glycerol trinitrate. In the intensive care, 38 patients required this support for 24 hours. Out of the 53 patients taken to ICU, 47 patients were weaned off the ventilator next morning. Six patients however remained on ventilators for 48-96 hours. Post-operative complications included persistent low cardiac output (6 patients), ventricular arrhythmia (6 patients), peri-operative infarction (1 patient) and sternal dehiscence (1 patient).

There were a total of 4 hospital deaths. One patient died per-operatively and 3 died on 1st, 2nd and 8th post operative days respectively. Various precipitating factors of these deaths were low cardiac output, fibrillation, non-elective surgery, unstable angina, Thin-walled, dilated left ventricle, COPD, diabetes mellitus and nephropathy.

Evaluation of status at the time of discharge showed

remarkable improvement in their functional class. Out of the total of 54 patients who underwent surgery, 50 were discharged alive from the hospital; 43 patients were discharged on 10th-12th post operative day and 5 patients between 13th-16th post-operative day. Two patients were discharged on 19th and 22nd day each. Medication at the time of discharge included aspirin, digoxin and mild diuretic in all the patients. Eight patients were also taking acetoperil in moderate doses.

DISCUSSION

Coronary artery bypass grafting in patients with left ventricular ejection fraction 25% or below, carries a high morbidity and mortality^{1,2}. Most of these patients are in functional class III or IV on maximum medical therapy. Some of these patients may not seem very symptomatic. A detailed history however, reveals that these patients have learnt to live a more sedentary life-style. Any treatment that brings an improvement in the functional class of these sick patients is desirable.

The cause of severe left ventricular dysfunction is usually fibrosis of myocardium due to multiple fast infarctions and longstanding ischemia³. Another factor aggravating this dysfunction is hibernating myocardium. Myocardium has an inherent property to slow down and contract less vigorously when exposed to ischemia under certain physiological limits⁴. This negative inotropic effect of jeopardized, chronically ischemic myocardium also contributes to the severity of LV dysfunction in many cases⁵. In addition, all the anti-anginal medicines like beta-blockers and calcium-channel blockers also carry a negative inotropic effect. In this scenario, if an adequate revascularization is performed, then it may not only bring improvement in angina, but at the same time, may bring about improvement in left ventricular function, as well.

Selection of cases for CABG surgery among these high risk patients needs careful screening. The risk factors which were identified in our patient population are as follows:-

- Emergency operation. It is a known risk factor for all the patients undergoing CABG surgery⁶. In our patient population, out of the 4 patients who underwent non-elective surgery, 3 had ventricular arrhythmia and low cardiac output. Of these, 2 patients died after surgery.
- Thin walled dilated left ventricle: It was the most important independent predictor of mortality in our series. All the patients with left ventricular end-diastolic dimension, 60 mm or more and those with wall thickness of 8 mm or less, had low cardiac output, post-operatively. All these patients were weaned off the extra-corporeal circulation with heavy inotropic

support. Among these, one patient died on 2nd post-operative day.

- c. Prolonged aortic clamp: It has previously been reported by a few authors as a risk factor⁷. In our study, all the patients who had prolonged aortic clamp time needed more inotropic support, later.
- d. Diffusely diseased thin coronaries: This predictor may be a cause of prolonged aortic cross-clamp time, leading to myocardial damage. It is however an independent determinant seen in patients where distal run-off in the newly anastomosed graft remains low due to diffuse atherosclerosis of the receiving coronary artery.
- e. Associated illness: Diabetes mellitus, chronic renal failure and chronic obstructive airway disease are known as predictors of post-operative morbidity and mortality⁸. In our study group, out of the 4 patients who died, 3 had one or more of these risk factors.

It is a retrospective study. Such analyses have their limitations. The number of patients is also relatively small. Therefore some of the known determinants could not be evaluated statistically because of the small size of the subgroup. In conclusion myocardial revascularization by CABG surgery carries a higher mortality in patients who have severe left ventricular dysfunction. Survival may be improved by careful selection of patients.

The patients who survive this high risk procedure show a remarkable improvement in the quality of life. The predictors of morbidity and mortality are emergency operation, unstable angina, thin-walled dilated ventricle, diffusely diseased coronaries and associated illness like diabetes.

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DETECTION OF ROTAVIRUSES FROM DIARRHEAL STOOL SPECIMENS

YASMEEN SHAH, KAZMI R. R. SYED, AMTUL HAFIZ

ABSTRACT:

Two-hundred-ten stool samples were collected at National Institute of Child Health between August 95 and January 96, from clinically diagnosed patients of acute diarrheal syndrome below the age of two years for detection of rotaviruses by E.L.I.S.A. technique using commercially available kits. Rotaviruses were detected in 61 (29%) samples. The highest incidence was found among children ranging between 13-24 months of age. The frequency of these viral particles gradually increased with advancing age of the patients; thus lowest frequency was noted among infants below six months of age. These particles were more frequently detected in male (57%) than females (43%) indicating a higher incidence in males. This study emphasizes on importance of rotaviruses in the etiology of diarrheal diseases in Karachi.

KEY WORDS: Rotaviruses: Infantile diarrhoea.

INTRODUCTION

Secretory or infective diarrhoea is the most extensively studied diarrheal type, being primarily a disease of young children throughout the world, mainly affecting the small intestine, leading to dehydration and electrolyte imbalance which is life threatening for patients below two years. About 97% instances of infectious diarrhoea are associated with etiological agents that are either viral, bacterial, parasitic or fungal in origin occurring as single or in combination^{1,2,3}.

Group A rotaviruses are the single most important etiological agents of acute diarrheal syndrome in infants and young children throughout the world⁴. In Australia rotaviruses were first detected in 1973 in duodenal biopsies of children with acute diarrhoea by electron microscopy⁵. Rotaviruses are closely related to reoviruses morphologically and in mode of replication therefore these are included in genus rotavirus within family reoviridae^{6,7}. These particles are known to cause more than 50% of infantile diarrhoea. During infection rotaviruses permeate by unknown mechanism into intestinal villi. These particles replicate in the cytoplasm of enterocytes and damage transport mechanism by producing mild

histologic changes in small intestine. The damaged cells slough into the lumen of intestine and release large quantities of rotaviruses that are recovered in stool. Rotavirus illness is usually mild but severe dehydration and fatal outcome may result. Vomiting is prominent early symptom are followed by watery diarrhoea. Mucus is formed in about 25% of cases, mild pyrexia occur in 30-50 % of cases. The illness lasts for 4 - 7 days and the rotaviruses are shed upto 12 days in healthy patients but may be prolonged in patients with poor nutrition^{2,3,8}.

Rotaviruses can be detected directly by immuno-fluorescence, immuno-diffusion, immuno electron microscopy (I.E.M.) methods or indirectly by E.L.I.S.A. method or by a rapid latex agglutination system^{9,10}. The indirect tests are cost effective and more convenient as they require less equipment in the laboratory. Both these indirect tests are commercially available in form of kits. Since environmental conditions in Pakistan are not much different from other countries which have higher incidence of rotaviral diarrhoea, therefore present study was conducted to determine the presence of rotaviruses in the population of our community.

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MATERIAL AND METHODS

The collection of stool samples was made from August 95 to January 96 by using sterile containers in National Institute of Child Health, Karachi from clinically diagnosed patients of infantile diarrhoea and transported to the microbiology laboratory.

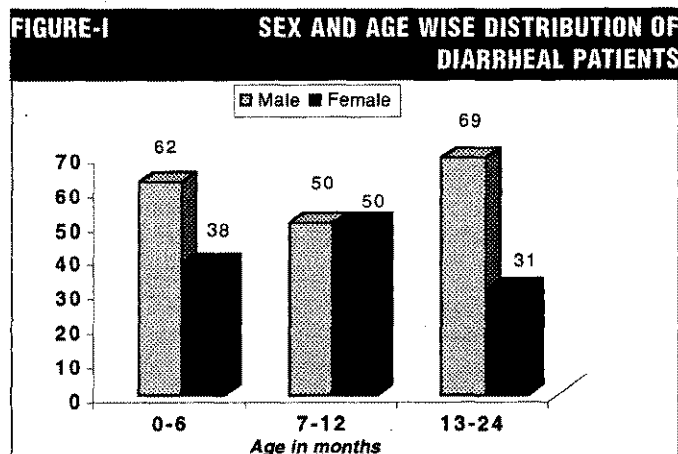
In the laboratory each diarrheal stool sample was transferred in 10% Brain Heart Infusion (BHI) broth (Difco) tubes. These tubes were centrifuged at low speed 1000-1500 rpm for 10 minutes. About 2ml of supernate was transferred in small sterile containers having 1% gelatin and frozen. At a later date these frozen samples were analyzed for detection of rotaviruses by ELISA technique using Bionetic (Bionetics, USA) and Dakopatt (Dakopatts, Copenhagen, Denmark) kits.

The detection of rotaviruses was confirmed by the presence of green colour development in the wells of micro test plates after 3.5 hours on case of Rotavirus Bio-Enzabead Test kit (Bionetics, USA) and the presence of brown coloration in the wells of microtest plates after 5 hours in case of Rotavirus ELISA kit (Dakopatts, Denmark).

RESULTS

All 210 patients, 124 males (59%) and 86 females (41%) below the age of two years suffering from acute diarrheal syndrome, were investigated (Fig-I).

The stool samples of all the patients were analyzed for detection of rotaviruses. The age and sex distribution of all the patients is shown in (Fig-I).

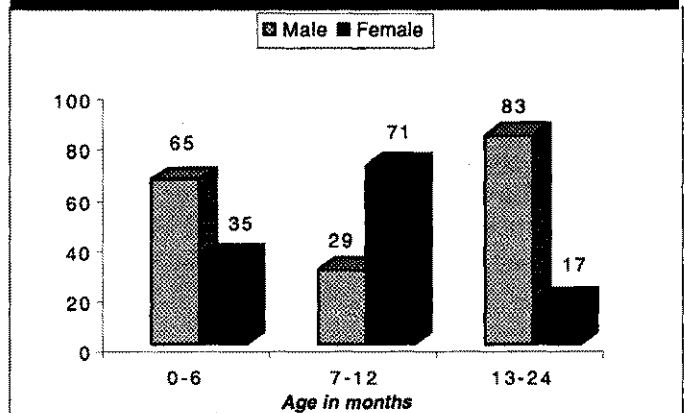


Rotaviruses were detected in 61 (29%) patients, out of which 35 were males (57%) and 26 were females (43%).

The relative frequency of rotaviruses in different age group is shown in (Fig-II).

The highest frequency was found among young children ranging from 13-24 months of age and lowest frequency

FIGURE-II SEX AND AGEWISE DISTRIBUTION OF ROTAVIRUSES IN DIARRHEAL PATIENTS



was noted in patients below the age of 6 months. Rotaviruses were more frequently detected in male patients of age groups 13-24 months and 0-6 months, whereas female patients belonging to age group ranging from 7-12 months were more affected.

DISCUSSION

In the developing countries like Pakistan diarrheal diseases alone are still responsible for high morbidity and mortality of infants and young children as compared to other illnesses put together. In this study we found that rotaviruses were more common than the conventional enteropathogens. We detected rotaviruses from diarrheal stool specimens of 29% patients of which 57% were males and 43% were females. The incidence was higher in males as compared to females in case of age groups ranging from 0-6 months and 13-24 months whereas females of age group 7-12 months were more affected than males. The reasons for this variation are not known. However in overall cases incidence in males was higher by 14% than females, which is in agreement with other studies indicating 20% rise of rotaviruses in male diarrheal patients due to unknown reasons¹¹. Our findings are similar to the findings reported from other developing countries. Stintzing et al reported 28% cases in which rotaviruses were detected as sole etiological agent from Ethiopia¹⁰. In Bangladesh rotaviruses were detected from 46% patients of infantile diarrhoea⁹. India has reported the detection of rotaviruses from the stool specimens of 43% patients of infantile diarrhoea whereas 13% cases of rotaviral diarrhoea have been reported from Brazil. In a recent surveillance in United States, rotaviruses were detected from the stool specimens of 6.9% cases of infant diarrhoea^{4,7,13}.

The youngest patient in whom we detected rotaviruses as the sole etiological agent of infantile diarrhoea was 10 days old female neonate which is the youngest age so far reported in the literature we came across. The clinical symptoms described in this study refers to only those

patients who attended this hospital. In a typical case patients had fever, abdominal pain, diarrhoea, dehydration and sometime passed frank blood in stool.

Present study also reflects the role of socio-economic status, living conditions including latrine facilities and source of water supply, environmental and personal hygiene as common contributing factors in diarrheal syndrome. The probable reason for higher incidence of infantile diarrhoea in male patients might be due to the fact that male child receive more attention in our society^{11,14}.

CONCLUSION

Our conclusion is that there is 29% rotaviral incidence in our community. Since rotavirus originated sicknesses are usually indistinguishable from those caused by other diarrheogenic enteropathogens, it is not possible to obtain any data on morbidity in the absence of laboratory identification. Therefore we emphasize constant monitoring of this etiological agent and suggest that all pathological laboratories must include its detection in their routine diagnostic tests.

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THE INTERNET: MODERN DAY LINGUA FRANCA

An introduction for health care professionals

NASEEM AHMED, K.A. SHAKOOR

INTRODUCTION:

In this age of information, Internet has become a fast, powerful international information source that has forever transformed the way we view and use information¹.

Hypertext Transfer Protocol (HTTP) is the modern day "Lingua franca" by which computers all over the world can share text documents, images, audio files and interactive programs (coded instructions for computer) over the internet. Tim Berners Lee (1989), proposed a standard for linking the documents over the net. In 1992, the term World Wide Web (WWW) was coined by CERN, which allowed the images to be viewed alongside the text. In 1994, Interactive text forms could be sent over the web and in 1995 sounds and movies were added. In 1997, powerful computer programming language and scripting revolutionized the computer world and turned it into an even more powerful tool^{2,3}.

To summarize, internet is a worldwide network of computers that can exchange information almost instantaneously, hence it has been called virtual community, larger than many nations, states, with it's own rules or "netiquette"⁴.

Originally a small number of connections were made between research computers, internet now includes major hospitals, publications, government agencies, businesses and individuals⁵.

Connection to this large network through a telephone line and modem provides access to several important channels of communication including Electronic Mail (e-mail), World Wide Web (WWW), news groups and mailing lists⁶. Each of this is an upto minute source of information and offers multiple services for life and health care; access to databases, consultation of image banks or electronic journals, teleteaching, information about congresses and societies and participation in thematic forums.

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Correspondence:

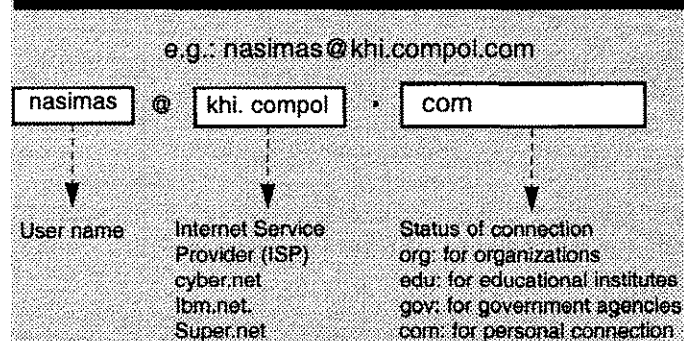
Dr. Naseem Ahmed, Department of Pathology, Basic Medical Sciences Institute, Jinnah Postgraduate Medical Centre, Karachi.

Internet Softwares: Softwares are computer programs to run a computer to achieve set goals. The common softwares for browsing/web surfing are Microsoft internet Explorer and Netscape gold. For email Microsoft Exchange and Netscape Communicator packages fulfills all the requirement for the use of internets. There are many other softwares which cover the other multimedia requirements etc.

E-mail:-

Electronic mail, one of the easiest and useful features on the internet, is like a post office. Composition of an e-mail address is depicted in (Fig-I). It comprises of two parts, the user identity and the domain.

FIGURE I: COMPOSITION OF AN EMAIL ADDRESS



Sending an e-mail is very simple. One has to type in the message, recipient's e-mail address and then click the mouse on the send button. A chart, data sheet or picture etc. can be attached to the mail. But the most important thing is to type in the recipient's address correctly because even a single misspelled word will bring the mail back with an error message or deliver it to a wrong person.

A person who does not have a PC, can have his own e-mail address through numerous free e-mail service providers e.g. hotmail (<http://www.hotmail.com>) or Net-address (<http://www.netaddress.com>) (Table-I).

TABLE-I: LIST OF ABBREVIATIONS

FTP	File Transfer Protocol
HTML	Hyper Text Mark up Language
HTTP	Hyper Text Transfer Protocol
PC	Personal Computer
URL	Uniform Resource Locator
WWW	World Wide Web
e-mail	Electronic Mail
ISDN	Integrated Services Digital Network
CME	Continuing Medical Education
WBT	Web Based Training

WORLD WIDE WEB (WWW)

As mentioned earlier the WWW is based on the hypertext linking. A hypertext link, appears on the screen as an underlined word, often in another color, is linked with another document and when the mouse is clicked over the link the distant computer transfers the document to the first computer that allows it to jump from one to another document e.g. from Armed Forces Institute of Pathology (AFIP); (<http://www.afip.org>) in Washington D.C. to Royal College of Pathologists (<http://www.rcpath.com>) in London.

The WWW has ECGs, heart sounds and motion pictures of angiographies etc., hence it is also a useful tool for junior medical students.

One of the distinctive features of web is MEDLINE (Table-II), which is provided free of cost by National Library of Medicine (<http://www.nlm.nih.gov>). "Chat room" is a late twentieth century phenomenon and is a text version of a telephone call in which the message can be delivered to other chatter's in the room or it can be delivered to some specific chatter. Unlike e-mail, in chatting immediate response can be expected to a chat room message.

TABLE-II MEDLINE ACCESS

Free MEDLINE by Info retrieve	http://www.infotrieve.com/freemedline
MEDLINE and Pre-MEDLINE	
Provided by National Library of Medicine (NLM)	http://www.ncbi.nlm.nih.gov/pubMed/

To gain access to website one needs to know the address. The computer experts call it Uniform Resource Locator (URL). For example, the address URL of Dow Medical College and Civil Hospital Karachi is <http://www.dmc.edu> (the site is under construction). The availability of high quality websites that are updated frequently could and indeed should play an increasing important role in medical education. But it is still a debatable question if these sites are going to replace the usual hard cover text books⁷.

A LIST OF RENOWNED INSTITUTES

Armed Forces Institute of Pathology (AFIP)	http://www.afip.org
World Health Organization	http://www.who.int
World Health Organization Statistical Information System	http://www.who.int/whosis/whosis.htm
International Agency for Research on Cancer (IARC)	http://www.iarc.fr
National Institutes of Health (NIH)	http://www.nih.gov
The Royal College of Physicians	http://www.rcplondon.ac.uk
The Royal College of Obstetricians and Gynaecologists	http://www.rcog.org.uk
The Royal College of Surgeons in Ireland	http://www.rcsi.ie
The Royal College of General Practitioners	http://www.rcgp.org.uk
A great site for pathologists with atlases, online cases etc.	http://www.medschl.cam.ac.uk/pa-th-uk/index.htm
Royal College of Pathologists of Australasia	http://www.rcpa.edu.au
The Royal College of Surgeons England	http://www.rcseng.ac.uk
The Royal College of Pathologists, College of Physicians and Surgeons Pakistan	http://www.rcpath.org http://www.cpsp.edu

TABLE-III LIST OF SOME USEFUL SEARCH ENGINES

Yahoo	http://www.yahoo.com
A search engine for Pathologists and laboratory professionals	http://www.pathsearch.com
ALTAVISTA	http://www.altavista.com
Biochemical Easy Search Tool (BEST)	http://www.worthington-biochem.com
Euro Search Engine	http://www.euroseek.net
Excite	http://www.excite.com
Global Online Directory	http://www.god.co.uk
India Search Engine	http://www.indiasearchengine.com
Pregnancy and Parenting Search Engine	http://www.thelaboroflove.com
Study Web	http://www.studyweb.com
United States of America Web Resource	http://www.usawebpages.com
What-U-Seek	http://www.whatuseek.com
BabyOIL – resource discovery system	http://www.dstc.edu.au/babyOIL
Oncology Search	http://www.janssenoncology.com
MEDSITE.COM The Service portal for medical community	http://www.medsite.com

SEARCH ENGINE

As the web is growing it is becoming harder to find what one is looking for. Free search services commonly known as search engines have emanated to help and find the desired URL.

Connecting to a search engine is same as for any website. The web page of search engine contains a small blank box where the command is typed in and within few seconds to minutes (depending on the speed of the connection) a list of desired URL's is displayed on the monitor. Table-III shows a list of search engines.

NEWS GROUPS & MAILING LIST

News groups are the Net's world-wide bulletin boards; in internet terminology this entire component is called the Usenet. These are meant for world-wide consultations and exchange of ideas among specific subgroups. There are more than 15,000 such groups, several hundreds of which are devoted to health. An extensive list of news groups is available at <http://www.liszt.com/news>.

Mailing list is similar to having it on a paper mailing list. This is operated by a special software on the distant computer and each message to that computer is distributed to every person on the mailing list. For example mailing list of histology society of Ohio is named as Histonet and its address is HistoNet@Pathology.swmed.edu. An extensive list of listserves (mailing lists) is available at <http://alabanza.com/kabacoff/Inter-Links/talk.html> Or www.liszt.com.

LIST OF: ONLINE MEDICAL JOURNALS & PUBLISHERS

British Medical Journal (BMJ)	Http://www.bmj.com
Journal of American Medical Association (JAMA)	Http://www.amaassn.org/pub/lic/journals/jama/jamahome.htm
A comprehensive list of on-line medical journals	Http://www.gretmar.com/webdoctor/journals.html
Amazon.com online book store	Http://www.amazon.com
Black well publishers	Http://www.blackwell-science.com
Barnes & Noble College Bookstores	Http://www.bkstore.com
Lippincott Williams & Wilkins Publisher	Http://www.wilkins.com
Mosby-Year-Book, Inc. Medical Publishers	Http://www.mosby.com
Little Brown & Company; medical publishers	Http://www.littlebrown.com
Universal Medical Publishers	Http://www.ump.com
Mcgraw-Hill Health Professions Divisions	Http://www.pbg.mcgraw-hill.com/medical

CONTINUING MEDICAL EDUCATION

In a study carried out at the University of Pittsburgh, Horn et al., concluded that the CME over the WWW is an effective means of delivering CME to the community at large. It allows participating physicians the latitude to obtain convenient CME credits at their leisure, in contrast to regimented experience of formal CME conference or symposia. The interactive format of the CME allows the

participant to submit immediate comments or criticism to case authors and receive instant feedback on their own performance. The CME is replaced by the term Web Based Training (WBT) for the netters⁸.

The internet with all its benefits has introduced a new field in medicine; the "Telemedicine", which includes all medical activities in diagnosis, therapeutics or social medicine undertaken by means of an electronic transfer medium, thereby enabling the transmission of visual and acoustic information in their field over long distances, with the doctor not being personally present at the requested consultation⁹.

CONCLUSION

Although the internet has added new dimensions to our life and the world has turned into a "global village" like all developing technologies, there is a downside. The most difficult issue being confidentiality and legal liabilities, but these problems should not stop one from harvesting internet's great benefits. With a little caution and common sense the internet can become one of our most useful professional tool.

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SUTURE MATERIALS

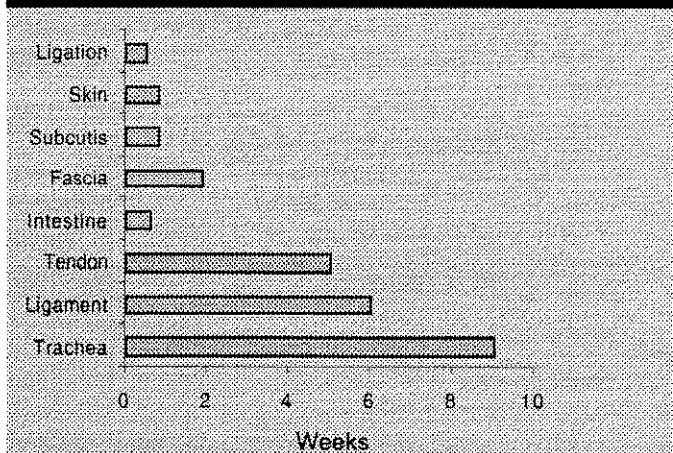
ANILA KAPADIA, SHAHID RASUL, SAGHEER HUSSAIN SHAH, ASADULLAH KHAN

A suture is a thread that either approximates and maintains tissues until the natural healing process has provided sufficient level of wound strength, or compresses blood vessels in order to stop bleeding.

An ideal suture is one which is sterile and applicable in any procedure; has physical limpness and does not kink, coil, twist or levitate, with no tissue reaction. It is inert, has enormous tensile strength, glides through tissues and sticks to itself for secure knotting. It is unaltered by sterilization process, is completely absorbed. It should not shrink in the tissues and should be comfortable and natural to handle.

Various tissues require different times to heal (Table-I). According to the time, suture materials are chosen to be used in surgery. Sutures are classified into absorbable (temporary) and non-absorbable (permanent) sutures.

TABLE-I APPROXIMATION OF SUPPORT NEEDED FOR VARIOUS TISSUES DURING HEALING



The United States Pharmacopoeia (U.S.P) defines an absorbable surgical suture as a: "Sterile strand prepared from collagen derived from healthy mammals or a synthetic polymer. It is capable of being absorbed by living mammalian tissue, but may be treated to modify its

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resistance to absorption. It may be impregnated or coated with a suitable antimicrobial agent. It may be coloured by a colour additive approved by the Federal Food and Drug Administration (FDA)".

Absorbable sutures lose most of their breaking strength within 60 days of implantation. Absorption occurs by the process of enzymatic proteolysis and they are absorbed by hydrolysis

Those suture materials which cannot be dissolved by enzymes and retain their breaking strength for more than 60 days are called non-absorbable sutures.

USP classifies and types non-absorbable surgical sutures as: Class-I sutures are silk and synthetic fibers of mono-filament, twisted or braided. Class-II sutures are cotton, linen fibers, coated natural or synthetic fibers and Class-III sutures are mono-filament or multi-filament metal wire (Table-II & III). Class II sutures have serious potential disadvantage of contamination.

TABLE-II ABSORBABLE SUTURES

Name	Brand Name	Tissue Reactivity	Knot Security	Handling
Plain Catgut	---	Severe	Poor	Good
Chromic Catgut	---	Moderate	Good	Good
Polyglactin 910	Vicryl	Minimal	Fair	Good
Polyglycolic Acid	Dexon	Minimal	Fair	Good
Polydioxanone	PDS II	Minimal	Good	Good

TABLE-III NON-ABSORBABLE SUTURES

Name	Brand Name	Tissue Reactivity	Knot Security	Handling
Silk	---	Severe	Good	Excellent
Braided	Ethibond,	Moderate (If		
Polyester	Tevdek	coating sheds)	Poor	Good
Stainless	---	Practically	Excellent	Poor
Steel Wire		None		
Polypropylene	Prolen,	Minimal	Good	Fair
	Fluorofil			
Polyethylene	---	Minimal	Poor	Fair

Sutres can also be sub-divided into mono-filament and multi-filament (Table-IV)

TABLE-IV		
Mono-Filament	Multi-filament	
Plain Catgut	Synthetic	Absorbable
Chromic Catgut		
Polypropylene	Silk	Non-Absorbable
Nylon	Cotton	
Steel	Polyester Fiber	
	Braided Nylon	
	Braided Steel	

IMPORTANT SURGICAL SUTURES

VICRYL (POLYGLACTIN 910) is absorbable, braided and mono-filament synthetic fiber. It is a co-polymer of lactaid and glactide (polyglactin 370 plus calcium-stearate) and is dyed violet or white. Vicryl handles much like silk; it exhibits tissue drag and chatter as it is tied. Vicryl elicits only mild tissue reaction.

Vicryl retains 65% of its strength at 14 days after implantation, 40% is still present at 21 days and its absorption is complete by 70 days. It rapidly loses its strength prematurely in vitro in urine. Vicryl is good to handle has good secure predictable knots with wide application. Its disadvantage is premature strength loss in urine. Vicryl is used for general soft tissue applications. It can be used in the presence of inflammation and infection. It is used for gastro-intestinal, uro-genital and skin applications.

DEXON (POLYGLYCOLIC ACID) is an absorbable braided synthetic suture. It is homopolymer of glycolide and handles well and knots securely as compared to mono-filaments but not as compared to silk. It loses its tensile strength more rapidly and is absorbed significantly more slowly than polyglactin 910 suture. It is good in handling, gives secure knots, has predictable absorption with wide application. It is braided with capillary effects and it loses strength rapidly in urine. It is used to close fasciae and skin. It should not be used in locations where it is in direct contact with urine.

PDS-II (Polydioxanone) is an absorbable, mono-filament, synthetic suture. It is sold under the trade names of PDS and PDS-II. PDS exhibits memory and tends to coil or 'pig-tail' during use. PDS II increases the pliability (limpness) of the suture. It has secure knotting with proper technique. It is non-thrombogenic with wide application, non-absorbability and glides through tissues. Its memory, non-absorbability (if used as continuous suture around a lumen), sharp ends of the suture and increasing difficulty to tie with larger sizes are rather undesirable effects.

It is beneficial for surgery which requires long term support, like cardiovascular, general and plastic surgery. PDS should be avoided if sharp suture ends will create local injury and for continuous pattern anastomosis of lumen.

POLYESTER (DACRON POLYESTER) is manufactured from polyethylene terephthalate as a non-absorbable braided synthetic suture. It is the strongest suture manufactured to-date, does not weaken with wetting, has minimal reaction and maintains strength over time; though infections may require exploration and its removal.

Merseline polyester fiber sutures are untreated fibers of polyester closely braided into a mono-filament suture strand. They are dyed green (also white) for maximum visibility. It has sawing or tearing effect when passed through tissue.

Ethibond polyester sutures are braided strand of polyester fiber coated with polybutylate which provides smooth passage through tissue and smooth tie-down on each throw of knot. (Polybutylate is the only coating developed specifically as a surgical lubricant; it is a polyester material which adheres strongly to the braided polyester fiber strand). Strength and permanence with low reactivity and soft suture cut ends are its advantages whereas, a-septic placement is essential. Infected suture must usually be removed and knot security is a problem. Ethibond polyester sutures are used primarily in cardiovascular surgery.

POLYAMID (NYLON) another non-absorbable, mono-filament or braided synthetic suture, characterized by slight memory and elasticity. Manufactured clear or dyed red, blue, green or black to improve visibility. Nylon must be knotted multiple times and mono-filament nylon has sharp ends although considered non-absorbable, nylon is affected by hydrolysis and loses approximately 15% to 20% of its tensile strength per year.

Ethilon nylon suture is a polyamide polymer derived by chemical synthesis extruded into a mono-filament non-capillary single strand. It has high tensile strength with moderate tissue reaction and is dyed green or black.

Nurolon black braided nylon are filaments of nylon, tightly braided into a multi-filament strand which is treated for non-capillarity and is dyed black. Looks, feels and handles like silk but is stronger and elicits less tissue reaction.

Supramid (braunamid or vetafil) is a multi filament suture with polyethylene sheath. It handles more like a braided suture and when tied, the sheath fractures creating a

secure knot but it is a porous suture which can wick micro-organisms. It is packed in antiseptic and if implanted without prior autoclaving, infection and draining sinus may result; 10 to 20 autoclaving cycles result in approximately 0.5% reduced tensile strength. It is comparatively inexpensive, braided and mono-filament and has elasticity with wide applications. It has knot insecurity and gradual loss of strength. It is ideal for retention sutures and areas where long term strength will be required and for skin closure. Fine strands of nylon 7-0 to 10-0 are used in corneal repair, grafts and for neural anastomosis. Sheathed nylon should not be used in sites where it can be contaminated.

STAINLESS STEEL (SURGICAL STEEL) is non absorbable, mono-filament or braided, class III metallic suture which is inert, non corrosive and strong. Ductility makes knots absolutely secure.

Polydioxanone is slowly absorbed with 50% breaking strength remaining (BSR) at 35 days. It has initial strength with slow predictable absorption and wide application. It may not provide durable enough support with abnormal wound healing and pig-tailing sharp suture ends when cut short are its disadvantages. It is applicable in general, orthopaedic and ophthalmic surgery. It is excellent for fascial apposition and for suturing subcutis and skin and can be used in gastrointestinal and urogenital procedure. It is satisfactory for ligature and for thoracopulmonary procedures where long term support is considered necessary, but where ultimate absorption is important.

POLYPROPYLENE is a non-absorbable synthetic polymerized propylene extruded into a mono-filament suture material which may be clear or pigmented blue. It is one of the least reactive of sutures, non-thrombogenic and bacteriostatic locally. It retains its original breaking strength for years. Its plastic contributes to its knot security. It also exhibits significant memory and can be used in the presence of infection. It is non-reactive, strong, inexpensive and available as mono-filament and braided. It is sonographically and radiologically visible. It is autoclavable (loses strength over time). Though its handling is difficult, it is non-absorbable, magnetic and may interfere in magnetic imaging. Sharp suture ends require special scissors; kinks in the strands can make it particularly useless. It gives general closure and retention. It is used in skin, neuro surgery, tendon repair and orthopaedic surgery.

STAPLES circular, linear and linear-cutting stapling devices are used to form anastomosis. These devices can be disposable or reusable. Until 1986 the staples were always non-absorbable, being made of stainless steel. Absorbable staples have been developed and are

on trial. Staples can be used for oesophageal and rectal anastomoses.

RECENT ADVANCES IN SUTURES

DermaBond is a 2-octyle-cyanoacrylate. It is a skin glue and delivers the strength of healed tissue at 7 days in less than 3 minutes. It saves time, has painless application, and no suture to remove. It has cosmetic appearance equal or superior to sutures and reduces need for special dressings, anaesthetic, needles and syringes.

NEW BIOLOGICALLY BASED SURGICAL GLUE is a non toxic biological mixture of protein and a glycosaminoglycan. It is applied to desired tissue and is then activated by laser to form a seal. As healing occurs, the body absorbs these natural substances. It is used for filling up potential leaks left from sutures and staples, to join tissues such as in intestinal and biliary tract surgery. By using it, surgical time can be shortened and post surgical bleeding can be reduced. Other old existing glues either cause inflammation that impairs healing or are made of proteins that may be virally contaminated.

SPIDER SILK has contractive tension when wet so it can hold tissues together. It is slightly elastic so there is less problem of suture ripping out and is about 10 times stronger than silk or other suture material. It was used in rats and mice, where it causes no allergies or other tissue reaction. Sutures heal without any sign of deterioration after two weeks.

Camel hair has been used for blood vessel anastomosis.

The use of **ZIPPERS** in surgery is a relatively recent phenomenon. Previously it was only employed in cases involving purulent peritonitis or necrotic pancreatitis. Now it is used as an alternative to sutures or staples in many types of surgeries. Before its application, it is simply necessary to ensure that the skin around the wound edges is degreased with alcohol or ether and that hair are removed to guarantee an optimal level of adhesion. It is possible to shower with medical zipper but, bathing is not recommended. It is removed after 7 to 10 days, depending upon the state of healing. Removal is absolutely painless for patient and is simply performed by pulling off the closed zipper.

POLYVINYLIDENE FLUORIDE (PDVF) is less thrombogenic than polyester and is similar in handling characteristics but less prone to mechanical failure than polypropylene. Good handling and friction are its characteristics in tying of knots. Histologically no inflammatory cells were found in the tissue surroundings it. Scanning electron microscope examination of the cleaned surfaces found no evidence of degradation during 6 months in

vivo. It can be sterilized by beta and gamma radiation. PVDF is available as Vilene and Radene.

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POSTAPPENDICECTOMY INTESTINAL OBSTRUCTION DUE TO MECKEL'S DIVERTICULUM WITH A BAND

A case report

M. YASEEN ANWAR

ABSTRACT:

Intestinal obstruction due to Meckel's diverticulum with a band in a patient six months after appendectomy is reported. The patient underwent another operation and Meckel's diverticulum or one of its variants were not, at the time of appendectomy, suspected. It should be a habit of surgeons to look for Meckel's diverticulum especially if appendix is not inflamed at the time of appendectomy.

KEY WORDS: Postappendectomy intestinal obstruction, Meckels' diverticulum.

INTRODUCTION:

Intestinal obstruction due to Meckel's diverticulum with or without a band is a definite entity. Herein a case is reported in whom presence of Meckel's diverticulum was not suspected at the time of appendectomy.

CASE REPORT

A 42 year old doctor presented at the surgical department of Sui Gas Field Hospital with abdominal pain, distension, constipation and nausea, all of two days duration. Patient gave history of appendectomy six months ago at another hospital. On physical examination a right transverse scar four inches in length was found in the right iliac region. The abdomen was slightly distended and tender with maximum tenderness on either side of the umbilicus. Rectal examination was unremarkable. Complete blood count and other routine investigations were normal. X-ray plain abdomen in erect and supine positions showed multiple gas shadows with no fluid levels.

Treatment was started, but tenderness in the abdomen increased and a decision in favour of operation was made. Laparotomy was performed through right paramedian incision. Multiple adhesions were found stretching between the inner aspect of the previous incision and

small bowel and its mesentery. As the distended ileal loops presented into the wound they were traced distally. A mass of ileal loops with Meckel's diverticulum and a band extending from its apex to ileum was found. It was caught under an adhesion between the diverticulum and adjacent mesentery. The band was separated from its mesenteric attachment, the ileal loop was released and Meckel's diverticulectomy was performed. Abdomen was closed after peritoneal toilet. The patient recovered satisfactorily.

DISCUSSION

This is an interesting and unique case of intestinal obstruction following appendectomy. As patient had history of an operation in the past with a scar mark on the abdomen, diagnosis of intestinal obstruction due to adhesions was made. Management of the patient was started initially on conservative lines but lack of good response favoured surgical option. At no point during preoperative period a diagnosis of Meckel's diverticulum or one of its variants was thought of; although it was assumed that as appendectomy was already done so definitely last two feet of ileum must have been examined at that time. The diverticulum was two inches in length and fifteen inches from the ileocecal junction. There was no evidence of narrowing of ileum. The diverticulum was not inflamed nor the bowel adjacent to the diverticulum was oedematous.

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Figure-1: *Meckel's directiculum with a band*

It is not clear from medical literature whether the risk of an incidental Meckel's diverticulectomy is greater than the risk of leaving the diverticulum in place^{1,2}. Recently many authors have favoured excision of an incidentally discovered Meckel's diverticulum, regardless of age in order to avoid future complications^{3,4}. It is also widely believed that asymptomatic Meckel's diverticulum found incidentally at laparotomy in adults should not be removed but if there is a persistent connection with the anterior abdominal wall (either a fibrous band or a persistent duct), the connection should be excised, as the chances of developing future intestinal obstruction and complications is high^{5,6,7}.

CONCLUSION

It is concluded that during all appendicectomies, whether the appendix is inflamed or not the last two feet or so of the terminal ileum should be examined to exclude the presence or absence of Meckel's diverticulum or one of its variants and if a Meckel's diverticulum is found incidentally with a band, it should be excised as there is a chance of developing future intestinal obstruction.

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PENILE AGENESIS

A case report

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ABSTRACT:

A 3.3-kg male baby brought with absence of penis. The scrotum was present but testes were not palpable. No external urethral opening could be identified. On per rectal examination funnel shaped anal canal was found with fluid meconium staining. Further investigations revealed absence of right kidney and bilateral contractures of knee joint. As abdomen was distended sigmoid colostomy was performed. At exploration both testes were found in the abdominal cavity. Patient died of septicemia on 9th day of birth.

KEY WORDS: *Penile agenesis, Gender assignment.*

INTRODUCTION

Penile agenesis is a rare anomaly with the reported incidence of 1 in 10 million to 1 in 30 million births¹. It results from failure of genital tubercle, which develops during fourth week of embryogenesis². For labeling a case as that of penile agenesis there must be absence of corpora cavernosa and corpora spongiosum, with urethral opening anywhere from pubis, perineum to rectum³. Here in we report our experience of one such case at National Institute of Child Health, Karachi.

CASE REPORT

A 3.3 kg baby, born at full term by cesarean section, presented with absence of penis (Fig-I). Mother had regular antenatal visits. On examination patient was tachypnoeic with abdominal fullness. Costal margins were flared up. Distended gut loops could be easily appreciated. Abdomen was soft and no viscera was palpable. The phallus was absent. Scrotum was fully developed but testes were not palpable either in the scrotum or inguinal region. Anus was anteriorly placed with prominent skin tag at 12° clock position (Fig-II). Anal canal was funnel shaped. No urinary opening could be identified in anus or perineum. On per rectal examination, little finger could not be passed beyond 2 cm. On withdrawal fluid meconium came out. Bilateral contractures of knee joints were present. Left talipes calcaneovalgus was also present.

Ultrasound revealed absent right kidney; left kidney was normal. As patient was not passing meconium adequately, contrast enema was done which showed dilated colon (Fig-III). At abdominal exploration urinary bladder was found distended. The connection of urinary tract gastrointestinal tract was not looked for as urine was



Figure-I: *Patient with absence of penis.*



Figure-II: *The anus is anteriorly placed with prominent skin tag.*

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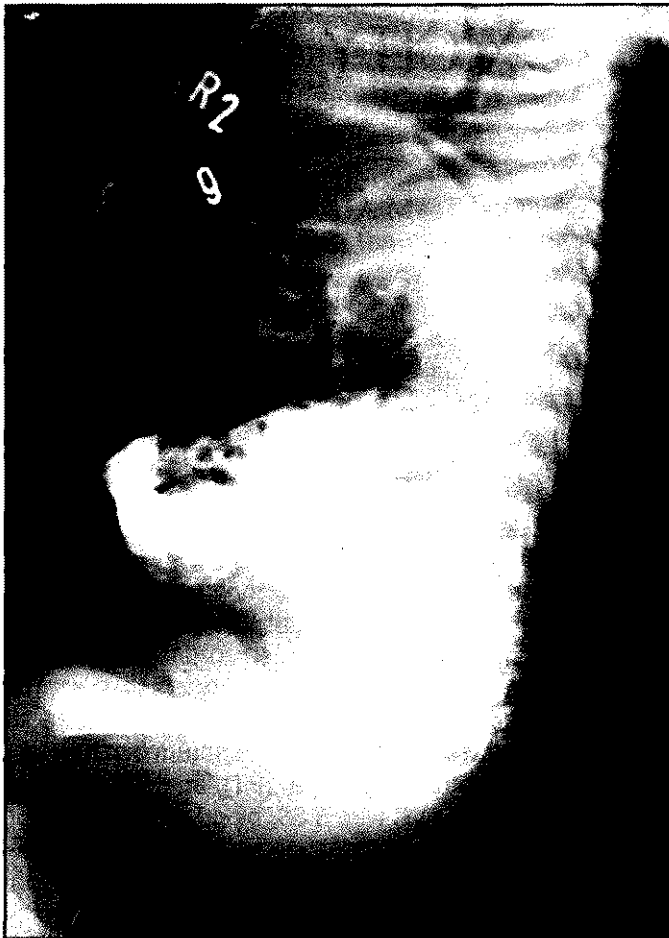


Figure-III: Contrast enema showing dilated colon.

coming out through anus and both testes were intra-abdominal in location. Sigmoid colostomy was performed. In post operative period patient developed repeated apnoeic attacks; later he went into septicemia and died on the 9th day.

DISCUSSION

Penile agenesis was first described by Imminge in 1853 and since then 70 cases have been reported in English language literature⁴. In this condition definitive urogenital sinus ends in the perineum without proliferating and moving anteriorly and cephaloid to the ventral border of the penis, genital tubercle being absent. In most reported cases urethral opening is located either in the perineum or as fistula, mostly in rectum. In more than 50% cases associated anomalies of caudal axis, genitourinary and gastrointestinal tract are also found. The more proximal the location of urethral opening, more chance of associated anomalies is there. Blind ending urethras and cases of urethral agenesis have also been reported⁵.

Gender assignment is always a problem in these cases. Although it is generally agreed that such babies should be reared as female and early feminizing reconstruction should be performed, for which various techniques with good results are described in literature. Long term results in such cases are not known⁶. Since these patients have normal testes along with already masculinized nervous system before reconstructive surgery at which testes are removed, what is actual psychological status of such patients is a matter of speculation⁷.

Our patient had many associated congenital anomalies including those of genitourinary and gastrointestinal tracts. The patient never passed meconium in adequate amount for which colostomy was performed but abdominal fullness never decreased which indicates that probably megacolon was also present. In our patient both testes were intra-abdominal and of good size although in literature usually intra-scrotal testes are reported.

Our patient died of septicemia on the 9th day. In reviewing literature it was found that in patients where urethral opening was located proximal to external anal sphincter, 36% died in neonatal period and mortality was 13% in cases where urethra opened distal to sphincter⁸. Reporting these cases is important as cumulative experience of various centers can help in exposing various aspects of such conditions.

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PARACETAMOL TOXICITY

A case report

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ABSTRACT:

Paracetamol is one of the most widely and freely medicine world over. Its side effects are rare but one must be aware of them and diagnose them early before they became fatal. One such case of paracetamol toxicity is reported which had a fatal outcome.

KEY WORDS: Paracetamol, Toxicity

CASE HISTORY

A 25-year married young American national of Pakistan origin presented with history of ingestion of 50 tablets of Tynalol (paracetamol) 500mg at National Poison Control Centre JPMC, Karachi. He came to the hospital four days after ingestion of the drug, in semi comatose condition with deep jaundice. This was his second suicidal attempt.

He was given injections Ringers lactate and Furesamide (Lasix) at home by his aunt who is a general practitioner and a Gynaecologist. She told him that she usually takes upto 10-12 tablets of Paracetamol 500mg daily as it does not cause any harm and is nontoxic.

On admission the patient was toxic and jaundiced. His temperature was 98 °F, blood pressure 160/70 mm of Hg and heart rate 140 per minute. He was unconscious, responding minimally to very painful stimuli. Pupils were dilated with sluggish reaction to light and "Doll's eye" movements were present. Glasgow Coma Scale was 6/15. His respiration was 28 per minute with episodic breathing and coarse crepitation in the right side of chest. His abdomen was tense but gut sounds were present.

The patient was immediately put on ventilator. Twenty-eight bags of fresh frozen plasma and concentrated platelets were infused. He was provided with antibiotic cover and Vitamin K 10 mg. The antidote of paracetamol, N -acetyl cystine 140 mg/kg was given at the time of admission and 70 mg/kg body weight every 5-hours through nasogastric tube. The patient initially improved slightly but suddenly deteriorated and died on the third day of admission. His total duration of stay in hospital was from 12th March (11.30 pm) to 15th March (7.30 am).

Initial laboratory investigations showed serum total bilirubin 7.58 mg/dl, direct bilirubin 5.07 mg/dl indirect bilirubin 2.51 mg/dl, Gamma GT 10720 u/l, and alkaline phosphate 2390 units/l, urea 65 mg/dl, creatinine 1.19 mg/dl, serum chloride 110 meq/l, serum sodium 153 meq/l, serum potassium 4.1 meq/l and serum bicarbonate 22 meq/l. His prothrombin time (PT) and APTT were markedly deranged. INR was 5.36, blood picture was not remarkable and there was no leucocytosis. Urinary paracetamol level was 247 nanograms per ml on the day of admission. Urine screening for other drugs of intoxication (barbiturate, opiate, benzodiazapine and cannabinoids) was negative.

On the 2nd day of admission his bilirubin level increased a total of 10.91 mg% (direct bilirubin 8.32 mg %) and later his total bilirubin reached 23.96 with bilirubin direct 7.82. While calcium was 10.12 mg%, his last report showed urea 91 mg per dl, creatinin 1.4 mg. and platelet's 18000 per cubic mm. Random blood sugar was 120 mg%.

DISCUSSION

Paracetamol, acetaminophen, N acetyl-p-aminophenol, APAP, NAPA 4 HYDROXY (Acetamidide) was first introduced in clinical medicine towards the end of the last century. But it attracted little attention and was soon forgotten¹. Renewed interest in Paracetamol appeared when it was found that the metabolite acetamylivine and phenestine are its major components² and these were assumed to be responsible for its therapeutic effects. With its increasing use, poisoning with Paracetamol emerged as a significant problem in many developed countries³. In United Kingdom, young adults, who have not been prescribed psychotropic drugs by their general practitioners, take Paracetamol in overdose frequently.

The major target organ damaged by Paracetamol poisoning is liver and the primary lesion is acute

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centrilobular hepatic necrosis. Boyd & Hogan observed severe hepatic necrosis in animals in 1968⁴. Children under the age of ten years appear to be much more resistant than adults⁵. It also produce acute renal failure in 1 to 2% of patients⁶.

The severity of intoxication cannot be determined on clinical grounds alone when the patient is first seen, as there are no specific sign or symptom. Nausea and vomiting usually develop within a few hours of ingestion of a toxic dose of Paracetamol. After 18 to 72 hours of ingestion there maybe hepatic tenderness and abdominal pain due to swelling of liver. Hepatic failure occurs due to high dose ingested, consciousness alone is usually not depressed in acute poisoning unless other drugs have also been taken. There is usually rapid improvement after the third day with eventual complete recovery.

Fulminant hepatic failure may develop in severely poisoned persons from third to the sixth day. It is characterized by deepening jaundice, encephalopathy, increased intracranial pressure, grossly disordered homeostasis with bleeding, hyperventilation, acidosis, hypoglycaemia and renal failure. The prognosis is than very poor⁹.

There is dramatic elevation of plasma Alanine and Aspartate transaminase activity from normal of less than forty to as much as 10000 or even 20000 u/l, initially with mild to moderate increases in plasma bilirubin and prothrombin time. Sudden increase of plasma transaminases is due to acute large mass of necrotic hepatocytes and prolongation of prothrombin time which reflects vitamin K dependent factors. Liver Biopsy shows centrilobular hepatic necrosis with little inflammatory reaction.

Complications of Paracetamol poisoning related to disturbances of prothrombin time are disseminated intravascular coagulation⁷. Acute pancreatitis,⁸ impaired carbohydrate tolerance, myocarditis¹⁰ and hypophosphatemia¹¹ are other complications. Serial measurements of prothrombin time probably give the best guide to prognosis¹². Oliguric renal failure may become apparent within 24 to 48 hours after an overdose of Paracetamol, and in this setting it is almost always associated with back pain, microscopic haematuria and proteinuria¹³.

Because of the absence of early specific symptoms and signs, the only reliable method of assessment of severity of poisoning is emergency measurement of plasma Paracetamol concentration in relation to the time since ingestion. Patients with concentration of 200 mg/litre at 4 hours and 30 mg/litre at 15 hours have chances of developing severe liver damage while before 4 hours of ingestion the concentration cannot be

interpreted for the line of treatment.

ANTIDOTES

Until 1973 there was no effective treatment for Paracetamol poisoning. In series of classical studies on Paracetamol metabolism, the conversion of drug by cytochrome P-450 dependent on mixed function. It produced an Acetyl benzo quinoneimine (MAPQIA) which causes hepatic necrosis. It also causes depletion of mitochondria and cytosolic pools of reduced glutathion. Enzymes that have been shown to be inhibited in Paracetamol treated animals are glutathion transferase and plasma membrane ATPase, producing cell death.

The maintenance of hepatic Glutathion concentration by administration of N acetylcystine was first suggested for paracetamol poisoning by Prescott and Matthew (1974), N acetylcystine may reduce the severity of liver necrosis by directly conjugating with or reducing the reactive metabolites¹⁴. It also decreases proteins binding and enhances degradation. The dose of acetylcystine is 140 mg/per kg initially followed by 70 mg/kg of 17 doses at 4 hours intervals.

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HERNIATION THROUGH ILIAC CREST BONE GRAFT DONOR SITE

Case reports

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ABSTRACT:

Herniation through Iliac crest bone graft donor site is one of the rare acquired hernias. Only few hundred individual case reports have been published world wide. Left over rigid bony rim of remaining ala of ilium has been labelled as the main factor in development of the hernia. We are reporting our experience employing synthetic mesh for repair in two cases of herniation through large defects in iliac bone produced after use of a full thickness bone graft from that site. Creation of diaphragm by Merseline mesh and soft tissue imbrication over that resulted in satisfactory repair. No recurrence is seen during the two years followup

KEY WORDS: Iliac hernia, Iatrogenic, Repair, Synthetic Mesh.

INTRODUCTION

Bone graft ranging from chips to massive full thickness are taken from iliac crest and its ala. Principles, indication and techniques of bone grafting were well established even prior to the "Metallurgic age" of orthopaedics. However, herniation through the donor side is rarely seen. The first ever occurrence of such herniation was reported by Oldfield in 1945. The true incidence is not known, reports mention ratio of 1:56 hernias at massive bone grafting donor sites^{1,2,3,4,5,6}. The majority followed removal of tricortical or biocortical iliac crest grafts, removed inadvertently or deliberately leaving a hole with rigid bony ring, (U shaped or oval) through which peritoneum and eventually bowel loops find their way. This rigid or semi-rigid bony ring has been reported as the main aetiological factor for development of hernia^{2,4}. Besides iatrogenic cause of bone defect, other rare causes reported include bullet injury hole, resection of ilium for pyogenic osteomyelitis following pedicle bone grafting for hip arthrodesis^{5,6,7}. Various techniques have been described in literature for closure of defects by reconstruction and repair, with the basic aim to prevent recurrence. Oldfield used aponeurosis of glutei turned up to imbricate with free edge of external oblique muscle⁸. Reid used lateral flap of aponeurosis of external oblique muscle rotated over the defect and

attached to iliac fascia⁹. Lewin sutured outer larger circumference⁵, where as Pyrtok and Kelly used fascia lata graft to close inner rim and synthetic tantum mesh to close outer rim of the defect². Similarly Formoise used braided wires drilled through remaining crest, rim and abdominal muscles at upper margin of defect⁷. Based on his concept of rigid ring defect as a basic cause of hernia Bosworth recommended removal of remaining ala of ilium on either side of defect to allow layered soft tissue closure⁴. All these reports claim safe and secure closure of defect but all are based on individual case reports; no large series with best possible technique has yet been reported. We are reporting two cases of herniation through iliac crest defect repaired with synthetic mesh and soft tissue reinforcement.

CASE -I

A fifty two year old lady with osteopenic bones of disuse atrophy, because of four months old non-united fracture femur shaft, was operated for fracture fixation and bone graft. Graft was taken from contralateral iliac crest. Three months post fixation, she broke the plate. She was reoperated with Rush nail fixation and massive bone graft, this time bone graft was taken from ipsilateral iliac crest and ala of ilium. The bone graft donor site was closed well by suturing glutei and abdominal muscles with suction drain. Her fracture healed well during the next five months. She was on crutches 3 months post operatively. Six months post fixation she noticed a swelling in the region of iliac

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crest bone grafting donor site. In subsequent weeks the swelling became larger and used to come out while standing and disappeared on lying down, until it became irreducible and attained the size of a small watermelon (Fig-I). It became locally painful with dragging sensation and remained persistently hanging from gluteal region. She used 'dupatta' corset to support it, but did not have any gastrointestinal symptom. Her general physical examination was normal; on examination, lump in the gluteal region was 6 x 8 inch round, tender, soft, compressible partly reducible with gargling sound. A defect in the iliac crest could be felt easily at the root of the lump with loops of intestine. Pelvic radiography revealed an oval defect (3" x 4") in the anterior iliac crest and ala of ilium (Figure-II). Under general anaesthesia, through an incision including the previous scar, hernial sac was dissected out easily without opening the peritoneum. The root of hernial sac at the bony rim was freed from the bone and soft tissues (glutei and iliacus muscles). Hernial sac was opened, loops of intestine reduced without difficulty. Redundant hernial sac was excised and the peritoneum closed with catgut sutures. Iliacus and glutei muscles were dissected and mobilized from both tables of the bony rim. Inner defect was repaired by approximating iliacus muscle fibres. Multiple drill holes were made in the rim of bony defect. Double layered Merseline mesh was fixed to form diaphragm with proline suture passed through the drill holes and at the upper margin of the defect through abdominal muscles and transversalis fascia. Glutei muscle were approximated over the repaired defect, soft tissue reinforcement accomplished; wound was closed in layers. Recovery was uncomplicated and no recurrent hernia was apparent till last followup 18 months postoperatively.

CASE -II

A fortyeight year old lady had anterior spinal fusion of L2-3 for tuberculosis and tricortical iliac crest graft from iliac crest and ala of ilium including tuberosity. Three months post spinal fusion on removal of lumbar corset, she noticed a swelling in the lower lumbar region projecting from the bone graft site. Initially it appeared on standing and coughing. It steadily increased in size over months (Fig-III). Eleven months post spinal fusion, she felt renal angle pain and dragging sensation in the swelling and at 15 months the swelling became painful. Her physical examination revealed a mildly tender, partly reducible, soft and compressible swelling in the region of bone graft. Radiologically iliac defect (2 inches x 1.5 inches) and intestinal loops were evidence on lateral view. After completion of antikoch's chemotherapy and evidence of solid spinal fusion, at twenty two months post spinal fusion she was operated for hernia. Similar procedure as in Case No-I was performed. Post operative recovery was uneventful and no complaints or signs of recurrence seen till last followup at 14 months.



Figure-I: Globular shaped herniation through Iliac crest defect.

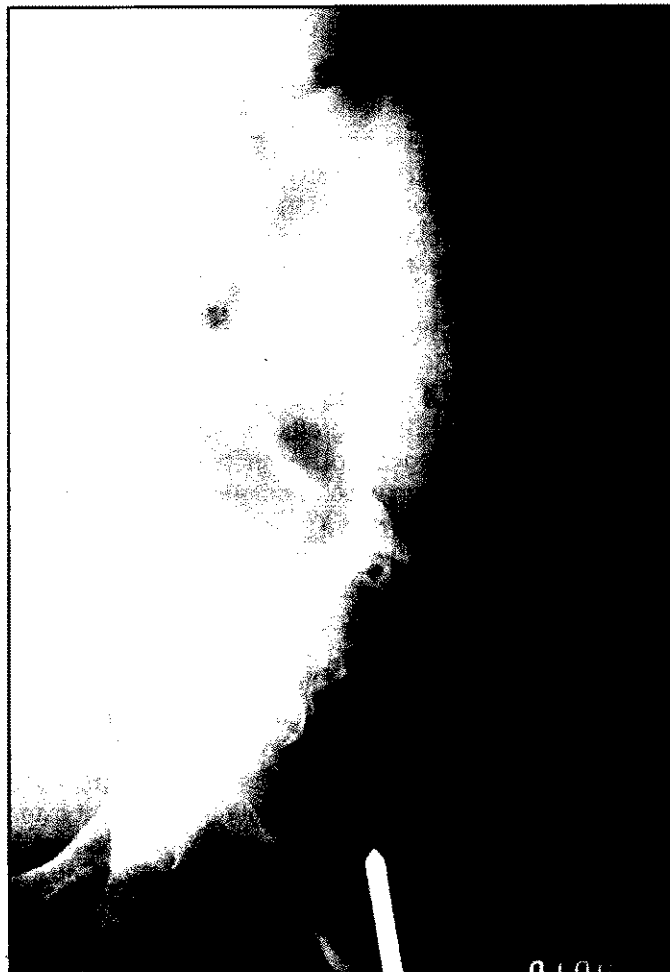


Figure-II Oval defect in anterior superior iliac crest and ala with hernia projecting out.



Figure-III *Hernia in patient with Tuberculosis of spine*

DISCUSSION

Pathophysiologically the occurrence of hernia is due to rigid and semi-rigid defects in the abdominal wall. Peritoneum followed by intestine finds its way through the bone defect left over by taking massive tricortical or bicortical graft from iliac crest and ala of ilium^{2,3,5}. Hernia may present as simple or complicated. It usually presents as iliac swelling through anterior bony defect or lumbar swelling through posterolateral defect, which steadily increase^{1,7,9}. Commonly it presents as an asymptomatic soft compressible mass, with local discomfort. Sometimes it is associated with pain. Rarely it presents with strangulation^{1,9}. Pain epigastrium is caused by traction on the mesentery and pain lower abdomen is due to incarcerated sliding hernia of caecum and ilium. The defect felt on palpation, often is U shaped or oval with inner smaller and outer larger ring^{1,7}.

In both the cases we are reporting, one had iliac hernia with local symptoms and another had lumbar hernia with symptoms like kidney pain. The hernias were reducible and un-complicated. The earliest occurrence of an iliac hernia reported is one month after removal of iliac bone graft⁸. In majority of reports patients usually present years later^{1,8,9}. However, both of our patients had hernias five and three months after bone grafts.

Hernias of long duration often develop adhesions that

result in irreducibility. In such situations a counter incision (extended Mc Burney incision) in the right or left lower abdomen is required to facilitate reduction and dissection, otherwise single posterior incision including the previous surgical scar is sufficient to reduce hernia and accomplish repair and reconstruction of the bony defect. The diagnosis of iliac hernia is easy due to presence of soft lump at the operation site with bony defect. Whereas, posterior iliac hernia may mimic an abscess, soft tissue tumour, muscle hernia, renal tumour or panicular lumbosacro-iliac hernia.

The preservation of crest of ilium by removing outer cortex with cancellous bone and preserving the inner cortex is cosmetically good and less likely to result in herniation. If the surgeon has no other choice to remove massive tricortical or bicortical iliac crest graft, he must exercise great care in securely closing the defect by attaching contiguous fascias with strong non-absorbable suture material or reconstruct the defect at the time of removing crest bone graft, with use of fascia lata graft and / or synthetic mesh^{1,6}. Wolf and Kawamoto recommend a technique of taking full thickness bone graft from anterior iliac crest¹⁰. The crest is split off obliquely both medially and laterally, so that the edges of the crest may be reapproximated after the bone has been excised.

This technique is more suitable for children as iliac crest epiphysis growth continues without disturbance. We conclude that careful repair of supporting structures after removal of an iliac crest graft is probably the best method of preventing such hernias.

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