

# Islanded Greater Palatine Artery Flap for Anterior Oronasal Fistula Repair

Gul-e-Rana Malik,<sup>1</sup> Muhammad Mughese Amin,<sup>1</sup> Muhammad Asghar<sup>1</sup>

## ABSTRACT

**Objective** To describe the usefulness of islanded greater palatine artery flap for repair of anterior oronasal fistula.

**Study design** Descriptive case series.

**Place & Duration of study** Plastic and Reconstructive Surgery Department, Bahawal Victoria Hospital, Bahawalpur, from January 2013 to January 2015.

**Methodology** Five patients were selected for the study who had history of cleft palate repair. Selection was based on location and size of fistula and amount of residual palatal mucosa. Assessment was done for postoperative wound complications, postoperative speech and swallowing and donor site morbidity.

**Results** All the patients underwent islanded greater palatine artery flap. One patient was operated with bilateral islanded flaps. Postoperative diet started between 1<sup>st</sup> to 3<sup>rd</sup> day (mean 2 days). Patients were discharged on 3<sup>rd</sup> -5<sup>th</sup> (mean 4<sup>th</sup> day) postoperative day without any postoperative donor site or recipient site complications. Donor site re-epithelialized within 4 weeks in all patients.

**Conclusion** The islanded greater palatine artery flap offers a reliable method of primary reconstruction of anterior oronasal defects.

**Key words** Islanded greater palatine artery flap, Oronasal fistula, Cleft palate repair.

## INTRODUCTION:

Oronasal fistula (ONF) is a challenging problem encountered after cleft palate repair.<sup>1</sup> The main symptoms associated with ONF are nasal regurgitation of food, poor oral hygiene and hypernasality of voice.<sup>2</sup> The incidence of oronasal fistula is highly variable ranging from 3.6% to 35%.<sup>3,4</sup> The main cause of formation of oronasal fistula is repair under tension and in some cases, as a result of postoperative infection.<sup>2</sup> Based on their

size, fistulas may be classified as small (< 2mm), medium (3-5 mm) or large (>5 mm).<sup>5</sup>

The palatal fistula can be described based on the location as anterior fistula, mid-palatal fistula, fistula at the junction of the soft palate and hard palate and soft palate fistula.<sup>2</sup> The goal of palatal reconstruction is to separate the oral and nasal cavities, promote good oral hygiene, and avoid impairment of speech and swallowing, and nasal regurgitation. It is not easy to restore associated swallowing and speech functions and reconstruct the defect using a "like tissue", while reducing donor site morbidity.<sup>6</sup>

There are many surgical options for repair of oronasal fistula like palatal islanded flaps, buccal mucosal flap, myomucosal flaps, tongue flaps, facial artery myomucosal flap (FAMM flap) and free tissue transfer.<sup>7-10</sup> Each of these reconstructive options offer their own distinct advantages, and

<sup>1</sup> Department of Plastic Surgery Bahawal Victoria Hospital Bahawalpur.

## Correspondence:

Dr. Gul-e-Rana Malik  
Department of Plastic Surgery  
Bahawal Victoria Hospital  
Bahawalpur  
E mail : mymoonsoon@hotmail.com

disadvantages. Tissue that is well vascularized, sensate, and similar in thickness is an ideal source. The tongue flap despite of apparent abundance of tissue for reconstruction and very well arc of rotation, is the most important organ in the oral cavity with respect to function.<sup>11</sup>

The palatal island flap as a single-staged mucoperiosteal flap, offers a reliable source of regional vascularized soft tissue.<sup>12</sup> The anterior oronasal fistula after the primary cleft palate repair is difficult to manage because of limited tissue mobility and scarring by previous surgery. If the previous surgery was done a long time ago, palatal tissue behave like a normal mucoperiosteal flap, so here comes the expanded utility of the palatal island flap by transferring nearly the entire hard palate mucosa based on a single neurovascular pedicle of greater palatine vessels and nerve.<sup>13</sup> The secondary defect of exposed palatal bone is resurfaced by new mucosa over several weeks, leaving little or no detectable deformity. In this study we report the usefulness of islanded greater palatine artery flap for the repair of anterior oronasal fistula.

#### METHODOLOGY:

This was a descriptive case series carried out from January 2013 to January 2015 in the Department of Plastic and Reconstructive Surgery, Bahawal Victoria Hospital, Bahawalpur. Each case was evaluated for defect size and location, local tissue condition, postoperative wound complications, postoperative speech and swallowing, and donor site morbidity. Baseline investigations were done and informed consent was taken.

In raising the palatal island flap, incisions were made according to the amount of donor tissue required to resurface the oral defect. Incision was made in the marginal oral mucosa around the fistula. The mucoperiosteum was elevated for a couple of millimeters, sufficient to allow the edges to be approximated as a nasal layer. The palatal flap was raised subperiosteally, sharply divided from nasal mucosa. The dissection was extended posteriorly on greater palatine artery. The flaps are partially divided posteriorly with careful protection of the greater palatine artery. This allows the flap to be advanced sufficiently to cover anterior fistula without any tension. The margins of the fistula were sutured to each other to create a nasal layer. The palatal flap was sutured anteriorly to the premaxillary periosteum and over the nasal repair and fistula. Donor site was left for secondary healing (Fig I).

Patients were put on intravenous antibiotics to

prevent infection. Assessment was done for postoperative wound complications, postoperative speech and swallowing and donor site morbidity. Patients were called for follow up on weekly basis for three months.

#### RESULTS:

Patients aged between 8-14 year (mean 11 year). The size of anterior fistula ranged from 1.5 cm<sup>2</sup> to 4 cm<sup>2</sup> (mean 2.6 cm<sup>2</sup>). All the patients underwent unilateral islanded greater palatine artery flap. The oral diet was started between 1<sup>st</sup> to 3<sup>rd</sup> day postoperatively. Patients were discharged on 3<sup>rd</sup> - 5<sup>th</sup> (mean 4<sup>th</sup> day) postoperative day without any postoperative donor site or recipient site infection. Donor site re-epithelialized within 4 weeks in all patients. Both flaps and the new mucosa that grew over the hard palate regained sensitivity. There was no flap dehiscence, flap necrosis, postoperative infections, or associated long-term donor site morbidity. All of our patients got understandable speech and good swallowing function.



Fig. I Closure of Oronasal Fistula

#### DISCUSSION:

Repair of anterior oronasal fistula is a challenging task. The islanded greater palatine artery flap is the most appropriate in this regard. The mucoperiosteal palatal island flap is easily harvested and provides a single stage reconstruction of suitable adjacent defects, as found in this series. A study conducted by Moore B et al concluded that the palatal island flap is an effective, reliable technique for reconstructing post ablative oral cavity defects.<sup>12</sup> Another study conducted by Kim et al showed the use of islanded palatal flap for palate reconstruction with the ability to eat solid foods and communicate verbally without significant disability.<sup>6</sup> Our results are comparable to both of these studies.

In a study 10% complication rate has been reported

where debridement was done for donor site re-epithelialization.<sup>13</sup> In this study no complication occurred as we did not perform debridement for donor-site re-epithelialization.

### CONCLUSIONS:

The palatal island flap is a good reconstruction technique for anterior oronasal fistula repair. The complication rates and donor site morbidity are low, with good functional outcomes.

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### Author's Contributions:

Gul-E-Rana Malik: Conception, design of work, drafting, interpretation of data.  
Muhammad Mughese Amin: Final approval of the version.  
Muhammad Asghar: Acquisition, analysis & interpretation of data.

### Conflict of Interest:

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