

# International Journal of Research in Health and Allied Sciences

Journal home page: [www.ijrhas.com](http://www.ijrhas.com)

Official Publication of "Society for Scientific Research and Studies" [Regd.]

ISSN: 2455-7803

Index Copernicus value [ICV] = 68.10;

## ORIGINAL RESEARCH

### Outcome of Anterior Maxillary Osteotomy Technique

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#### ABSTRACT:

**Background:** The anterior maxillary osteotomy (AMO) is employed primarily to reposition the anterior dento-osseous segment posteriorly. The present study was conducted to assess outcome of anterior maxillary osteotomy in study group. **Materials & Methods:** The present study was conducted on 42 patients selected for anterior maxillary osteotomy of both genders. The procedure was performed under general anesthesia with nasotracheal intubation. Any surgical and postoperative complications were assessed. **Results:** Out of 42 patients, males were 20 and females were 22. Common complications were airway obstruction in 1, hemorrhage in 2, dental hypersensitivity in 4, increased interdental spacing in 1, palatal tear in 6, palatal hematoma in 2 and partial necrosis in 1 case. The difference was significant ( $P < 0.05$ ). **Conclusion:** Authors found that common complication of anterior maxillary osteotomy was palatal tear and dental hypersensitivity.

**Key words:** Anterior maxillary osteotomy, Dental hypersensitivity, Palatal tear

Received: 23 June, 2020

Revised: 25 July, 2020

Accepted: 28 July, 2020

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**This article may be cited as:** Singh SU, Rajan S, Khan AS, Bhavika, Kalpana K, Gupta A. Outcome of Anterior Maxillary Osteotomy Technique. Int J Res Health Allied Sci 2020; 6(5): 136-139.

#### INTRODUCTION

The anterior maxillary osteotomy (AMO) is employed primarily to reposition the anterior dento-osseous segment posteriorly. It is also used to move the segment superiorly or inferiorly as indicated.<sup>1</sup> The first reported anterior segmental maxillary osteotomy was performed in 1921 by Cohn-Stock, wherein a wedge of palatal bone was removed through transverse palatal incision and the anterior maxillary segment was retracted through elastic force.<sup>2</sup>

Anterior maxillary osteotomy is a reliable, simple procedure in the management of deformities of the

dentoalveolar region. However, the literature offers very little information about this procedure. The necessity of AMO has declined because of recent advancements in orthodontic-orthognathic treatment preparations.<sup>3</sup> The scope for a discussion of complications of AMOs is mostly restricted to books, and lacks recent additions. The spectrum of complications associated with AMOs is very similar to that reported in Le Fort I osteotomies and varies greatly, from minor problems with dental hypersensitivity to fear of loss of an osteotomy segment because of avascular necrosis.<sup>4</sup> However, few complications are

exclusive to AMOs that are significantly different from those encountered during a Le Fort I osteotomy, and these merit special mention. Difficulty in planning for surgery, with consideration of the movement desired and the vascularity, calls for attention.<sup>5</sup> The present study was conducted to assess outcome of anterior maxillary osteotomy in study group.

**MATERIALS & METHODS**

The present study comprised of 42 patients selected for anterior maxillary osteotomy of both genders. All were well informed regarding the study and their consent was

obtained. Ethical clearance was obtained prior starting the study.

Demographic profile such as name, age, gender etc. was recorded. The procedure was performed under general anesthesia with nasotracheal intubation. All patients were discharged on the first or second postoperative day. The normal follow-up regimen included fortnightly reviews for the first 2 months, followed by recalls every 6 months. Any surgical and postoperative complications were assessed. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

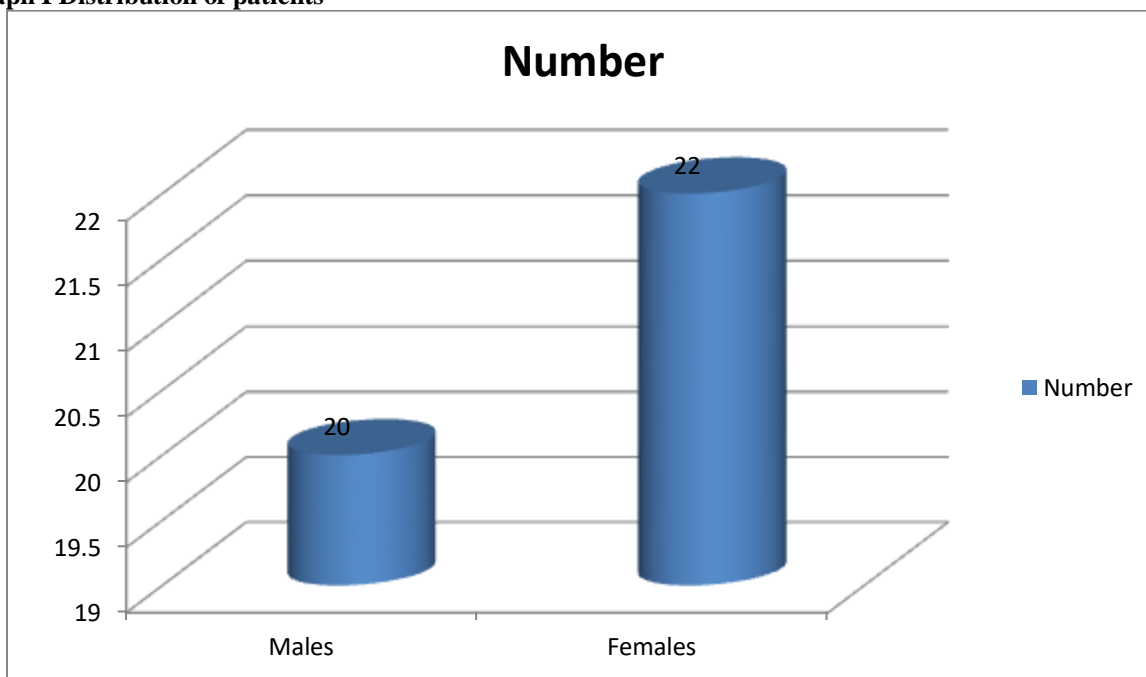
**RESULTS**

**Table I Distribution of patients**

Gender	Male	Female
Number	20	22

Table I shows that out of 42 patients, males were 20 and females were 22.

**Graph I Distribution of patients**

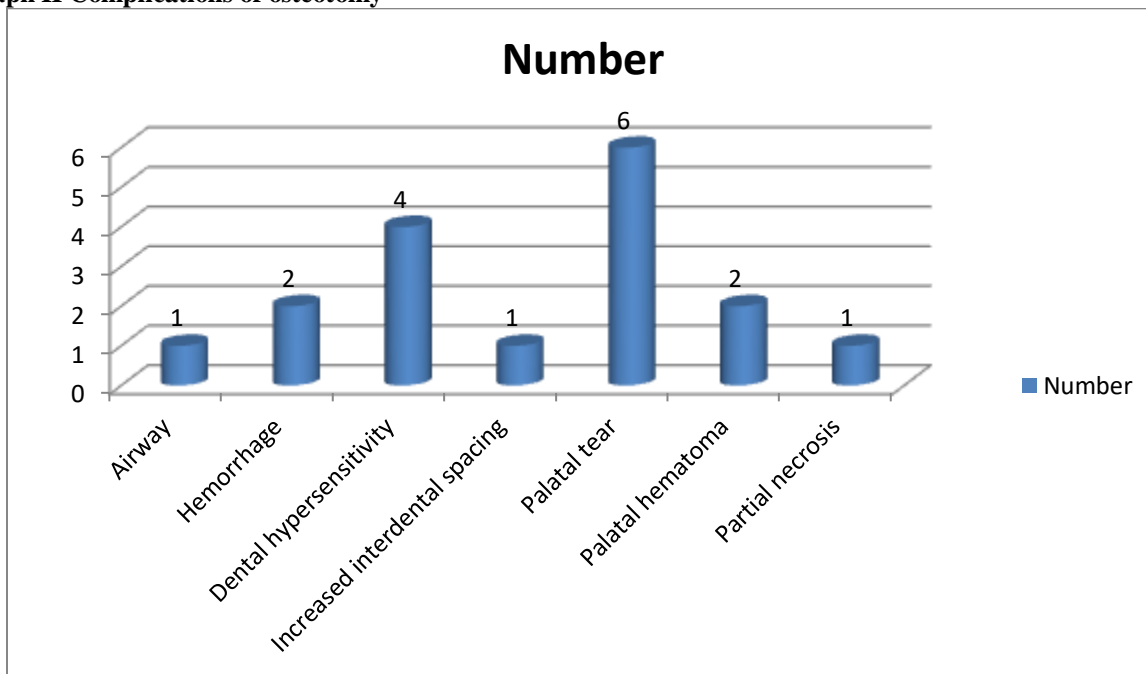


**Table II Complications of osteotomy**

Complications	Number	P value
Airway	1	0.01
Hemorrhage	2	
Dental hypersensitivity	4	
Increased interdental spacing	1	
Palatal tear	6	
Palatal hematoma	2	
Partial necrosis	1	

Table II, graph II shows that common complications were airway obstruction in 1, hemorrhage in 2, dental hypersensitivity in 4, increased interdental spacing in 1, palatal tear in 6, palatal hematoma in 2 and partial necrosis in 1 case. The difference was significant ( $P < 0.05$ ).

**Graph II Complications of osteotomy**



**DISCUSSION**

Several approaches for AMO has been advocated like Wassmund's technique introduced in 1927, Wundere's technique in 1963 and Cupar's technique in 1954 is the most preferred approach by many surgeons as it allows access for bone removal under direct visualization through the nasal floor.<sup>6</sup> The bone from the lateral, superior, and posterior palatal surfaces are removed in slice until the premaxilla segment is placed in predetermined position as indicated by prefabricated splint. This maneuvering of bone removal by a trial and error method increases the operating time, leading to prolonged kinking on the palatal pedicle with resultant compromise to the vascularity of the anterior segment.<sup>7</sup> This bird wing segment technique is a simple procedure, which allows the precise amount of calculated bone removal in a single piece from the nasal floor markedly reduces the duration of the surgery by nearly one-half of the time during bone removal with the conventional method there by reducing the kinking effect to the palatal pedicle and maintains good perfusion to the osteotomy segment.<sup>8</sup> The present study was conducted to assess outcome of anterior maxillary osteotomy in study group.

In this study, out of 42 patients, males were 20 and females were 22. Gunnaselan et al<sup>9</sup> studied the intraoperative and perioperative complications associated with anterior maxillary osteotomy (AMO),

and assess its safety and predictability in orthognathic surgery in 103 patients. 27 (26.2%) patients in our series of 103 had complications of varying severity: 43.3% of these were soft tissue- related and 36.6% were attributable to dental causes. All other complications accounted for the remaining 20%. Although its indications are limited, AMO is a safe and reliable procedure in routine orthognathic surgery.

We found that common complications were airway obstruction in 1, hemorrhage in 2, dental hypersensitivity in 4, increased interdental spacing in 1, palatal tear in 6, palatal hematoma in 2 and partial necrosis in 1 case.

Mechanical and technical difficulties in AMOs depend to a great extent on the technique employed. The difficulty in performing an AMO is attributable to restricted access for a palatal osteotomy, especially with the down-fracture method. Inexperience in performing the procedure can lead to intraoperative complications such as difficulty in down-fracturing the segment, as recorded in 1 case where a resident performed the procedure.<sup>10</sup> Delayed union in the maxillary segments is another complication that must be addressed. The healing of a maxilla is more fibroosseous in nature, compared with the true bony union of the mandible. This may be delayed in certain cases by poor bone contact, improper fixation or stabilization of segments, or infection at the osteotomy site. Two delayed unions

were reported, but without evidence of infection or inadequate fixation.<sup>11</sup>

Kannan et al<sup>12</sup> evaluated the efficacy of a single piece bird wing osteotomy segment during anterior maxillary osteotomy (AMO) markedly reduces the duration of the surgery by nearly one-half of the time during bone removal with the conventional method thereby reducing the kinking effect to the palatal pedicle and gives good perfusion to the anterior segmenton 20 patients in which male: female ratio was 8:12, with a mean age of 25-30 years. This bird wing segment technique is performed following presurgical orthodontics under the guidance of clinical assessment of the gummy smile with an incisal show when the lip is at repose (vertical maxillary excess), especially for the calculated amount of superior repositioning. It is calculated by subtracting 2 mm from the total amount of an incisor show when the lip is at repose. The normal incisal show when the lip is at repose is 2 mm. After conventional primary AMO cut was performed, the precise calculated. All our cases were tested positive for pulp vitality, no relapse, and minimal edema and with no changes in the bite or dentoalveolar relation followed until 1 year postoperatively indicating a good perfusion to the anterior segment and all the patients were satisfied esthetically and free of complaints. The shortcoming of the study was small sample size.

#### CONCLUSION

Authors found that common complication of anterior maxillary osteotomy was palatal tear and dental hypersensitivity.

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