

Comparison of incidence of different plating systems used for OGS in a private hospital setting

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Abstract

Mandible fractures account for a major fraction of maxillofacial injuries, and despite advanced imaging technologies and fixation procedures, evaluating, diagnosing, and managing these fractures remains difficult. Complications like malocclusion, discomfort, and revision surgeries can be avoided by understanding proper surgical care. Various open and closed surgical reduction techniques can be used depending on the nature and location of the fractures. Mandible fractures are a common type of facial skeleton injury.

This study focuses on comparing the incidence of different plating systems used in orthognathic surgery among patients of saveetha dental college. The study population involves patients with an orthodontic chief complaint. The data of the patients were extracted from patient records from DIAS.

Key words : Orthognathic surgery, Titanium plates, fractures

Introduction

Mandible fractures account for a significant portion of maxillofacial injuries and the evaluation, diagnosis, and management of these fractures remain challenging despite improved imaging technology and fixation techniques(1)(1,2). Understanding appropriate surgical management can prevent complications such as malocclusion, pain, and revision procedures. Depending on the type and location of the fractures, various open and closed surgical reduction techniques can be utilized. Mandible fractures are very common injuries to the facial skeleton(3). Titanium plates have been used for over two decades to achieve internal rigid fixation of mandibular fractures(4). Many advantages such as bio-compatibility, rigidity, ease of application, and few reported complications have achieved reliable results(5)(6). Titanium plates, however, may require additional surgery for removal One advantage of a resorbable plating system over a conventional titanium plating system is that resorbable plates do not require subsequent removal(7), and thus a second surgery is not needed

However, they have less strength than metallic plates. Unlike titanium plating systems, resorbable plating systems have not been used on a large scale for the fixation of mandibular fractures(8).

Although studies have evaluated the efficacy of resorbable plating on isolated mandibular angle and symphysis fractures no studies have specifically evaluated the effectiveness of a resorbable plating system in the treatment of combined angle and symphysis fractures. compare the resorbable plating system with the conventional titanium plating system(9) for treatment of combined fractures in the mandibular angle and symphysis in terms of fracture union, restoration of function, frequency of complications, and specific technical challenge

Kirschner wires and Steinman pins have also been used and are thought to provide good stability.4 Bone plate osteosynthesis and screw fixation are other stabilization methods now widely used. all told cases, the chin should be rigidly fixed by either wires, miniplates or screws(10). Rigid fixation techniques were introduced in an effort to decrease the post-surgical relapse rate. Advancement genioplasty, compared with alloplastic implantation, can provide both functional and aesthetic benefits for the patient(11,12). Yet, despite numerous modifications and progress in the advancement of genioplasty, facial plastic and plastic surgeons, unlike oral maxillofacial surgeons, seldom use this system. Our team has extensive knowledge and research experience that has translate into high quality publications (13),(14),(15),(16),(17–26)(27),(28–30).(31,32)

MATERIALS AND METHODS

This is a retrospective study conducted in a university setting. The case records were reviewed from June 2019 to April 2021 and the patient data who underwent cleft lip repair surgery was collected and evaluated. An institutional committee approval was obtained to access the personal data of the patients. A total of 74 records of patients who underwent orthognathic surgery was retrieved and both photographic and radiographic evaluation was done..All patients who underwent orthognathic surgery were recorded. The data was tabulated and analysed using IBM SPSS software version 20. Descriptive statistics was done to determine the frequency percentage of age, gender, and place of residence and Chi square test was done to find the association between the patients community with the age and gender of the patients. The level of significance was set at 0.05. The results were presented in the form of graphs.

Results and discussion

The results of this study shows that 74 patients that reported to the Dental OP have undergone orthognathic surgery. Among the 74 patients 50% were male and 50% were females.Fig1 The patients who undergo orthognathic surgery is due to trauma or aesthetic complaint, in this study it was found out that most of the orthognathic surgery done in the college was related to both maxilla and mandible with 46% of the cases being both arches followed by mandible at 32% Fig2. in this study it was found out that there were two main components involved in the fixation type of orthognathic surgery . Treatment planning is very essential in orthognathic surgery. It is important to assess and choose the desired plating system prior to the surgery. From the study we found out that in saveetha dental college 70% of the OGS cases use miniplates ,1.35%of the cases used wire osteosynthesis and 25% of the cases used both miniplates and wire osteosynthesis in combination Fig3.

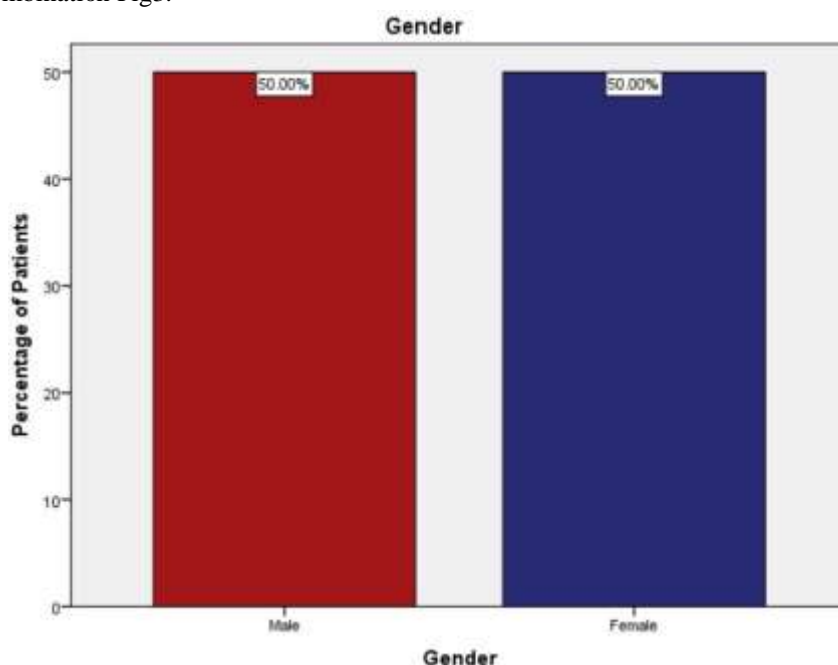


Fig 1 Bar chart representing the distribution of gender among the samples. 50% of the patients were males (Red) and 50% of the population were females (Blue).

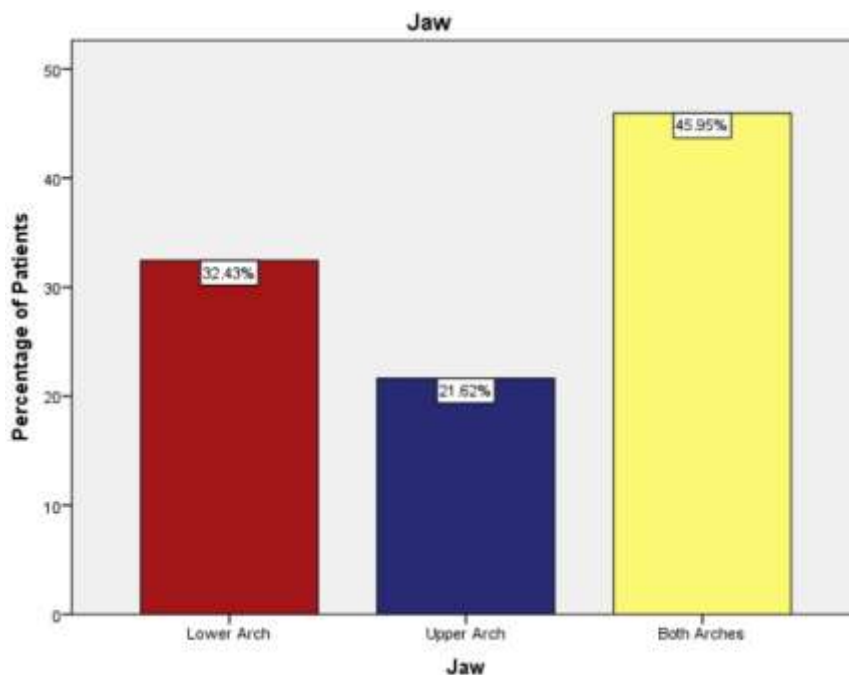


Fig 2 Bar chart representing the prevalence of orthognathic surgery done most commonly in both arches followed by lower arch and finally upper arch. 32.43% of the population underwent orthognathic surgery in Lower arch (Red), 21.62% of the population underwent orthognathic surgery in Upper arch (Blue) and 45.95% of the population underwent orthognathic surgery in Both arches (Yellow).

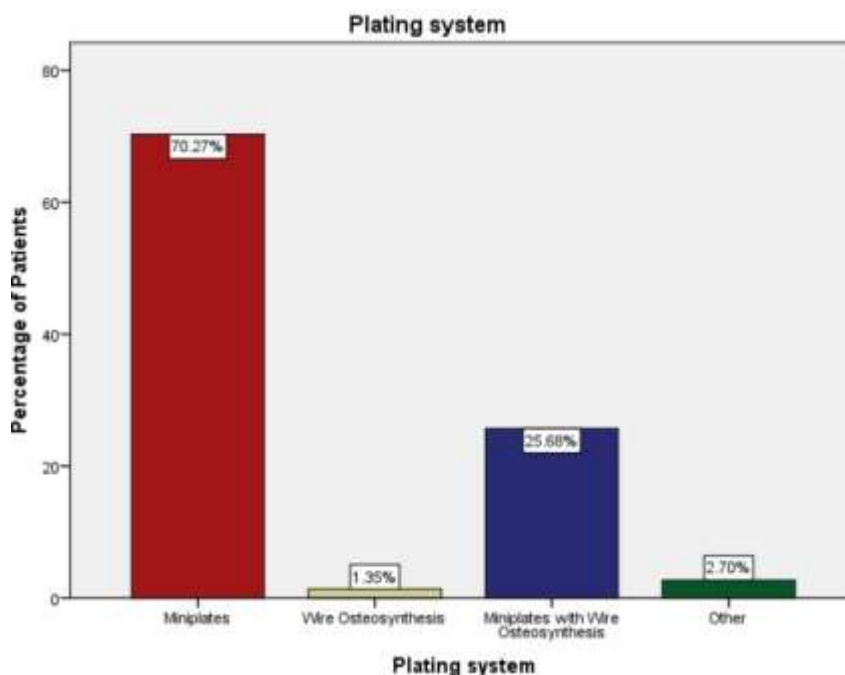


Fig 3 Bar chart depicting the different plating system used in orthognathic surgery. 70.27% of the population used miniplates system (Red), 1.35% of the population used Wire osteosynthesis system (Beige), 25.68% of the population used Miniplates with wire osteosynthesis system (Blue), and 2.70% of the population used other systems (Green).

Conclusion

From this study we can conclude that miniplates and miniplates in combination with wire osteosynthesis is the most common plating system used in orthognathic surgery performed in saveetha dental college.

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