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EXTRAORAL VERSUS INTRAORAL APPROACH FOR MANDIBULAR ANGLE FRACTURES : A COMPARATIVE STUDY.

Clinical Research

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ABSTRACT

The main purpose of the study is to compare the extraoral and intraoral approach for mandibular angle fractures. Ten randomly selected patients who sustained maxillofacial fractures were selected for this study. In 5 patients (Group-A) open reduction with internal fixation done through intraoral approach and in the remaining 5 patients (Group-B) open reduction with internal fixation done through extra oral approach. The results of this study suggest that accessibility in intraoral approach is less than extra oral approach. The extra oral approach results in transient paraesthesia, unesthetic scar, trismus with increased operating time. The study concludes that intraoral approach is the best approach with less duration time ,no unesthetic scar, trismus and nerve injury during reduction and internal fixation of mandibular angle fractures.

KEYWORDS

Extraoral approach, Intraoral approach, unesthetic scar.

INTRODUCTION:

Mandibular fractures represents approximately two thirds of all the maxillofacial fractures (nearly 70%) out of which fractures of mandibular angle represent for 26-35% .They occur alone or in combination with other facial bone fractures resulting in severe loss of function and disfigurement.

The pattern of mandibular fractures varies with geographic location,physical activity, social, cultural and environmental factors. The main causes of mandibular fracture are Road traffic accidents, interpersonal violence, falls, sports injuries, industrial trauma, pathological fractures etc. Haug *et al*. gave the ratio of incidence of mandibular, zygomatic, maxillary fractures was 6:2:1 respectively. Facial injuries are clinically highly significant as the face provides anterior protection for the cranium.[1] The general principles of treatment for mandibular fractures do not differ from the treatment of fractures elsewhere in the body. The fragments are reduced into a proper position and then immobilized until such time bony union occurs.[2] Intraoral approach, performed through an oral mucosal incision, originally described by Kazanjian in 1933, results in no external scarring or injury to marginal mandibular nerve and allows direct visualization and confirmation of desired occlusion during placement of hardware. Documented complication rate is up to 10%.[3] Extra oral approach is commonly performed through submandibular (Risdon's) incision initially described by Risdon in 1934.This exposure theoretically provides a clean wound by separating the sterile plates from contaminated oral cavity. A complication rate of 9% been documented in the literature through this approach.3The advantages and disadvantages of these techniques often puts the surgeon into a dilemma as to which approach should be followed. In the light of these factors, the aim of this study is to compare the treatment outcomes through intraoral and extra oral approaches in fixation of angle of the mandible.

MATERIALS AND METHODS:

This study was conducted in the Department of Oral and Maxillofacial Surgery ,St.joseph Dental College and Hospital , duggirala, eluru .

10 patients who sustained mandibular fractures between the age group 16 – 50 years were randomly selected. All the patients underwent open reduction and rigid internal fixation in angle fractures under General or local anesthesia. In 5 patients (Group-A) open reduction with internal fixation done through intraoral approach and in the remaining 5 patients (Group-B) open reduction with internal fixation done through extra oral approach.

Inclusion criteria:-

1) Patients of both genders with in the age group of 16 to 50 years .
2) Sufficient bilateral dentition to allow maxillomandibular fixation.
3) Patients with isolated unilateral or bilateral mandibular angle fracture.
4) Patient who sustained fracture of the other parts of the mandible along with angle fracture in maxillofacial trauma.

Exclusion criteria:-

1) Infected fracture sites.
2) Medically compromised patients where open reduction and internal fixation is contraindicated.

MATERIALS:

Bard parker handle no.3, Blade no.15, Maxillofacial trauma kit, Polygalactin, 3-0 absorable suture material (vicryl),Polypropylene 4-0 non absorbable suture material(prolene)

METHODOLOGY:

In all the 10 patients Erich's arch bar fixation or eyelet fixation was done preoperatively.

The patients were divided in to 2 groups, GROUP A-includes 5 patients with intraoral approach. GROUP B-includes 5 patients with extroral approach.

The treatment includes open reduction and internal fixation under General anaesthesia or local anaesthesia and the closure of the wound is done with vicryl 3-0 and prolene 4-0 suture materials. The outcome of the surgical procedure was explained to every patient included in this study and informed consent was to be taken before the surgery.The patients were evaluated preoperatively, intraoperatively and postoperatively for various parameters. Postoperative clinical evaluation was done at the 1st week, 3rd week,5th week, 3rd month and 6th month respectively.

Intra operative and postoperative complications are evaluated which

Includes : difficulty in access, Difficulty in reduction and fixation of fractured segments, Duration of operating time,Wound dehiscence, Infection, Nerve damage,Hypertrophic scar, Trismus, Malocclusion.

Postoperatively I.V. antibiotics used were Injection Taxim (cefotaxime) 1 gm 12 hourly.

Injection Metrogyl (Metronidazole) 500mg eighth hourly along with analgesics(s-o-s).The antibiotics were continued for 5 days postoperatively. If any subsequent infection occurred the antibiotics were changed according to the culture and sensitivity reports. The patients were put on Injection Dexamethasone 4mg 12 hourly I.V.

postoperatively and the dosage tapered down in the subsequent 2-3 days to decrease postoperative oedema and inflammation in the surgical site.

GROUP A - INTRAORAL APPROACH



Fig 1: PREOP FRONTAL VIEW



Fig 2: PREOP OPG



Fig 3: INTRAORAL INCISION



Fig 4: PLATING



Fig 5: POST OP SUTURING

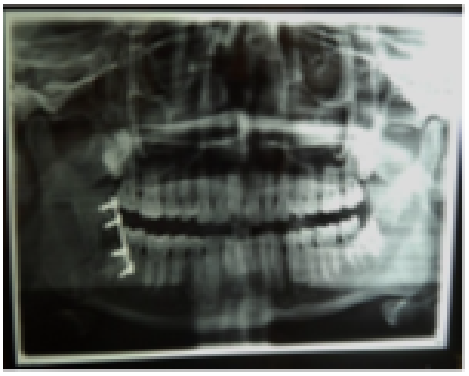


Fig 6: POST OP OPG

GROUP-B EXTRAORAL APPROACH

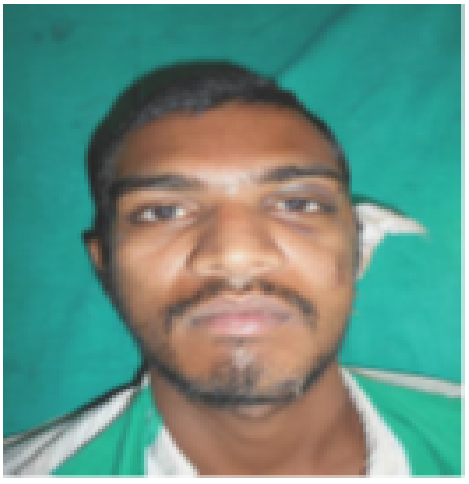


Fig7 PREOP FRONTAL

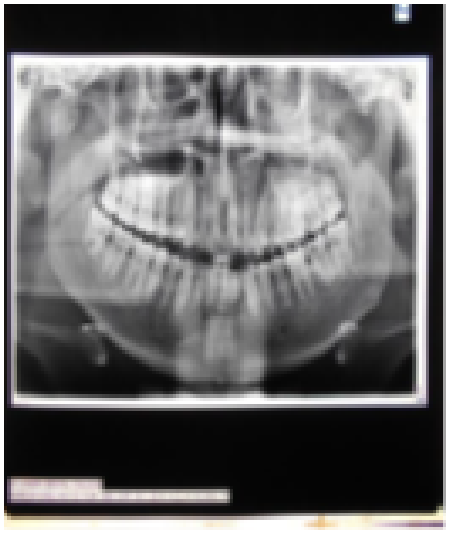


Fig8 PREOP OPG



Fig 9: RISDONS INCISION MARKING



Fig10 INCISION



Fig11.FRACTURE SITE

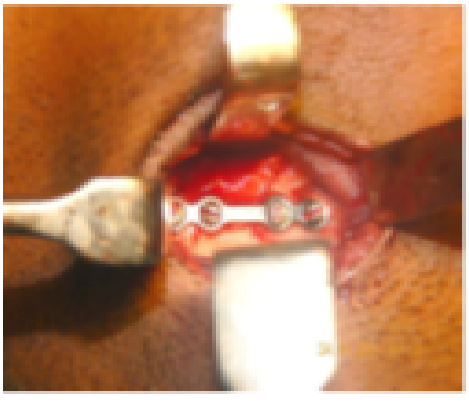


Fig12.BONE PLATING



Fig13.POST OP SUTURING

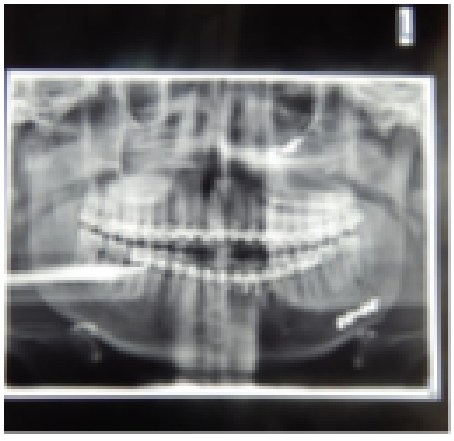


Fig14.POST OP OPG

RESULTS:

The mean operating time was less in Group A compared with Group B.

During submandibular incision in Group B, various anatomical structures may be encountered to access the mandibular angle which includes:1)marginal mandibular branch of facial nerve, 2) facial vessels(facial artery and facial vein),3)sub mandibular gland,4) Tail of the parotid . We ligated facial vessels in one patient (case 6) in group B. Accessibility is comparatively difficult in Group A than Group B patients .There is no unesthetic scar and neurovascular anatomical structures encountered during surgical intervention in Group A.

There is a slight unesthetic scar observed in 3 patients(case 6,7,and 8) in group B .The external scar is inconspicuous when the wound closure is done by subcuticular suturing technique in 2 patients (case 9 and 10) of Group B .

There is no trismus observed in Group A. but trismus is noticed in 2 patients of group B(case 9 and 10) as pterygomasseteric sling is to be detatched to access the fracture line running towards the inferior border of the mandible.

A good adequate occlusal stability is seen in both group A and groupB. Postoperative wound dehiscence was noticed in 1 patient (10%) in Group A (case 4) which is subsided by re-cutting and suturing the wound edges followed by Betadine irrigation and antibiotics.The study shows that intraoral approach is the best approach with less duration time ,no unesthetic scar, trismus and nerve injury for reduction and rigid internal fixation of mandibular angle fractures.But in cases where accessibility is less, extra oral approach is the best. However, the decision regarding treatment approach often relate to surgeons experience and training modified by factors that can affect uncomplicated healing.

DISCUSSION:

A mandibular angle fracture is defined as a fracture located posterior to the second molar tooth extending from any point on the curve formed by the junction of the body and the ramus in the retromolar area to any

point on the curve formed by the inferior border of the body and posterior border of the ramus of the mandible. The mandibular angle is distinguished in to **clinical angle**, **surgical angle** and **anatomical** or **gonial** angle. **Clinical angle** is the junction between alveolar bone and ramus at the origin of the internal oblique ridge. **Surgical angle** is the junction between body and ramus at the origin of external oblique ridge. **Anatomical angle** is formed where lower border meets the posterior border of ramus. The study shows that intraoral approach is the best approach with less duration time , no unesthetic scar, no trismus and no nerve injury for reduction and rigid internal fixation of mandibular angle fractures but in cases where accessibility is less, extra oral approach is the best. Sparing the cervical branch of the facial nerve by submandibular approach technique was demonstrated by **C.A.Righini et al.**[4] The technical safe guards include: (1) extension of the neck is not mandatory. (2) slight rotation(30%)contra lateral to operated site facilitates submandibular access without altering the position of the mandibular branch of facial nerve. (3) incision should be obliquely forward and downward starting posteriorly 30mm below the gonion and ending anteriorly 40mm below the inferior edge of the mandible Our study correlates with the study conducted by **Basheer-Rehman,Anam Iqbal et al** [5] who analyzed outcomes of intraoral and extra oral approaches and to provide an evidence for the effectiveness of superior border fixation to mandibular angle fractures and concluded that Intra-oral approach in the management of mandibular angle fracture is more desirable . with less operative time, fewer chances of infections and nerve damage as compared to extra-oral approach.

However, the decision regarding treatment approach often relate to surgeons experience and training modified by factors that can affect unecomplicated healing.

CONCLUSION:

In patients with intraoral approach, the mean operating time is less. unesthetic scar and may have a risk of injury to marginal mandibular branch of facial nerve.Extra oral approach may require ligation of facial vessels and trismus may develop in some cases.The external scar becomes inconspicuous when subcuticular suturing technique is done in case of extra oral approach.Good occlusal stability is observed In both extra oral and intraoral approaches. The present study concludes that intraoral approach is the best approach with less duration time ,no unesthetic scar, trismus and nerve injury during reduction and internal fixation of mandibular angle fractures. But in cases where accessibility is less and gross displacement of fracture segments, extra oral approach is the good option. However, the decision regarding treatment approach often relate to surgeons experience and training modified by factors that can affect uncomplicated healing. Accessibility is moderatively difficult in intraoral approach. There is no unesthetic scar and no damage to the marginal mandibular branch of facial nerve during surgical intervention in case of intraoral approach. There is no trismus seen in intraoral approach postoperatively. In patients with extra oral approach the mean operating time is more. Accessibility is very good with better exposure of the fractured segments in extra oral approach.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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