



Surgery

STUDY OF INCIDENCE OF THE CORONAL APPROACH IN CRANIOFACIAL TRAUMA AND ADVANTAGEOUS OF TITANIUM MESH IN RECONSTRUCTION OF CRANIOFACIAL DEFECTS.

Dr Mastan Shaik

Reader, Oral And Maxillofacial Surgery, St.joseph Dental College

ABSTRACT **INTRODUCTION:** The coronal approach gives a broad exposure to the frontal bone, the calvaria, the nasal bones, the orbits, the subcondylar region, the zygoma and the zygomatic arch and gives ideal aesthetic results with less complication. The common craniofacial fractures are Nasal bones (45%), cranial bones (24%), Mandible (13%), Zygoma (13%), Orbital blow-out (3%), Maxilla (2%). Common causes of fractures are Road traffic accident, Assault, Industrial accidents, Recreational accidents, Frontal bone fracture.

METHOD: The study was carried out for a period of one year from March 2020 to March 2021. The study conducted in St Joseph dental college ELURU in the department of Oral and Maxillofacial Surgery. The age limit for this study was below 30 years. The number of subjects involved in this study was 5. Number of females was 3 and males were 2 in this study.

RESULT: Number of female participants in this study was 3 and number of male participants was 2. Number of male participants with coronal incision were 1 and number of participants with pretrichial incision were 2. Out of 2 one for male participant and one for female participant.

CONCLUSION: The coronal flap has recently become a preferred approach for access to the craniofacial skeleton and orbit. This method of exposure has become particularly useful with increased indications for rigid internal fixation and primary bone grafting in the management of complex facial fractures.

KEYWORDS : Incidence, Coronal Approach, Craniofacial defects.

INTRODUCTION:

Combined frontobasilar and facial injuries may be isolated to the cranio-orbital area or be a part of more extensive injury involving the upper, middle, and lower facial regions. Central: paranasal sinuses adjacent to the skull base. Frontal, ethmoidal and sphenoid sinus. Lateral: frontal bone and orbital roof lateral to the frontal sinus.¹

The common craniofacial fractures are Nasal bones (45%), cranial bones (24%), Mandible (13%),

Zygoma (13%), Orbital blow-out (3%), Maxilla (2%).²

BICORONAL APPROACH: coronal approach popularized by PAUL TESSIER in 60s is one of the most versatile in treating craniofacial injuries. The coronal approach gives a broad exposure to the frontal bone, the calvaria, the nasal bones, the orbits, the subcondylar region, the zygoma and the zygomatic arch and gives ideal aesthetic results with less complication. **FRONTAL BONE FRACTURES** are rare because of its protected location, Protected the prominence formed by the nasal pyramid, Incidence of frontal #: 5-15%.³

COMMON CAUSES OF FRACTURES INVOLVING FRONTAL BONES: Road traffic accident, Assault, Industrial accidents, Recreational accidents, Frontal bone fracture:

TREATMENT GOALS: Protection of Intracranial structures, Control of CSF leak, Prevention of late complications like secondary mucoceles and Deformity correction.

BICORONAL INCISION: Ideal incision to upper 1/3rd of facial skeleton and the anterior cranium. Incision begins at the upper attachment of the helix on one side and extended transversely over the skull to the opposite side.

Steps for a Coronal flap: Scalp preparation, Placing the incision to the suprapariosteum level, Reflection of the flap supra periosteally, laterally and inferiorly, Periosteal incision 2cm above supra orbital margin.

Release of the supra-orbital neurovascular bundle: Operative procedure, Closure in layers, Placement of vacuum drain, Post-operative care. Modifications: placement of the incision behind the ear and ZIG-ZAG incision.⁴

METHOD:

The study was carried out for a period of one year from March 2020 to March 2021. The study conducted in St Joseph dental college ELURU in the department of Oral and Maxillofacial Surgery. The age limit for this study was below 30 years. The number of subjects involved in this

study was 5. Number of females was 3 and males were 2 in this study. Informed consent form was taken from all the participants involved in this study.

Inclusion Criteria:

Participants below the age of 30 years will be included in this study.

Exclusion Criteria:

Participants above the age of 30 years will not be included in this study.

RESULT:**Table 1: Shows Sex Distribution:**

SEX	NUMBER
MALE	2
FEMALE	3

Table 1 shows sex distribution of the participants. Number of female participants in this study was 3 and number of male participants was 2.

Table 2: Shows Age Distribution

AGE	MALES	FEMALES
22 -24	02	-
24 -25	-	03

Table 2 shows Age distribution of the participants. Number of males was 2 between the age of 22 -24 years and number of females was 3 between the age group of 24 -25 years.

Table 3: Shows Type of Incision used

TYPES OF INCISION	MALE	FEMALE
Coronal Incision	01	-
Pretrichial Incision	01	01
Hemi Coronal Incision	-	02

Number of male participants with coronal incision were 1 and number of participants with pretrichial incision were 2. Out of 2 one for male participant and one for female participant.

Number of participants with hemi coronal incision was 2 (females).

Table 4: Shows Type of Material used.

	male	female
1. Titanium mesh	01	---
2. stainless steel mesh	01	01
3. Titanium micro plating	---	02

In male patients 1 case was exposed with coronal incision and titanium

mesh is placed with good success rate.

trauma. Journal of Craniomaxillofacial Surgery 21:279-283, 1993.

In 2 female patients fracture exposure was done with .Hemi Coronal Incision and titanium micro plates were placed for fixation of fracture and another male case was exposed and stainless steel mesh was used to fix the fractured site

DISCUSSION:

Coronal Approach advantages are Extensive craniofacial trauma, Correction of craniofacial deformities, Single incision allows the management, Good cosmetic result, Avoids injury to facial structures and Allows harvest and placement of cranial bone grafts. Some potential complications are Infection, Hematoma requiring evacuation, Alopecia along incision line, Visible scar, Injury to frontal branch of facial nerve, Injury : supraorbital or supratrochlear nerves and Anesthesia posterior to the incision.⁵

RECONSTRUCTION OF THE CRANIOFACIAL DEFECTS: Autogenous tissue: calvarium, rib and iliac crest, Allogenic implants: AAA-bone, lyophilized cartilage. Alloplastic Material: methacrylate, hydroxyapatite, titanium implants and mesh systems.⁶

Indication for reconstruction with Titanium: Fracture of frontal region producing cosmetic deformity, Fracture involving the basifrontal region producing instability and grossly comminuted fracture with significant bone loss.⁷

Titanium micro-mesh: Immediate reconstruction in the primary treatment of comminuted fractures with bone loss in non load-bearing areas and treatment of contour irregularities.⁸

MINIMAL ARTEFACTS ON MRI AND CT: Cost effective, optimal stabilization of the fracture, excellent biocompatibility, Minimal inflammatory reactions it provokes and Easy to adapt in different shapes.⁹

Fractures of the frontal sinus are a relatively common injury presenting to trauma units that deal with craniofacial injuries. Approximately one third of frontal sinus fractures affect the anterior wall alone, with two thirds involving the anterior wall, posterior wall, or frontonasal duct. Isolated posterior wall defects were exceedingly rare.

The ideal surgical approach to treat craniomaxillofacial fractures should provide maximum exposure of the fractured segments, ensure less potential for injury to facial structures and allow for good cosmetic results. Several approaches have been described. Limited access to the fracture site, lack of adequate exposure and subsequent facial scars are among a list of objections to most of these techniques. However, the coronal approach, a technique that is widely used for craniofacial osteotomies and neurosurgical access to the intracranial contents, is an excellent alternative.¹⁰

Conclusion:

The coronal flap is a well recognized technique for exposing the skull and upper face. The coronal flap has recently become a preferred approach for access to the craniofacial skeleton and orbit. The variety of cases in which it has proven indispensable includes craniofacial reconstruction, facial trauma, and tumor resection. This method of exposure has become particularly useful with increased indications for rigid internal fixation and primary bone grafting in the management of complex facial fractures.

REFERENCES:

- 1) Text book of maxillofacial surgery, second edition, vol-1, peter ward booth, Stephen A schendel, jarg erich hausamen.
- 2) J trauma. 1994 Jan; 36(1):34-47. A comprehensive analysis of craniofacial trauma. Hussain K, wjetunge DB, grubnic S, Jackson IT.
- 3) Gonty, A.A., R.D. Marciani, and D.C. Adornato, (1999) management of frontal sinus fractures: a review of 33 cases. J oral maxillofacial surg 57(4): p. 372-9;
- 4) Ellis E III, Zide MF. surgical approaches to the facial skeleton. 2nd edition 2005. Lippincott Williams and Wilkins 91-92.
- 5) Vishal Singh et al. Versatility of the Coronal Approach in Maxillofacial Surgery. J Oral Health Comm Dent 2010; 4(1):16-21.
- 6) JJ Kuttenger, N Hardt - Long-term results following reconstruction of craniofacial defects with titanium micro-mesh systems. Surgery, Volume, April 2001, Pages 75-81
- 7) PK nayak Primary reconstruction of depressed skull fracture — the changing scenario An Indian journal of neurotrauma (IJNT) 2007, vol. 5, no. 1, pp. 35-38
- 8) Kuttenger JJ, Hardt N. Long-term results following reconstruction of craniofacial defects with titanium micromesh systems. J Craniomaxillofac Surg 2001; 29:75-81
- 9) Lakhani RS, Shibuya TY, Mathog RH, Marks SC, Burgio DL, Yoo GH. Titanium mesh repair of the severely comminuted frontal sinus fracture. Arch Otolaryngol Head Neck Surg 2001; 127:665-9.
- 10) David A. Mitchell, Neil A Barnard: An audit of 50 bitemporal flaps in primary facial