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A CLINICAL STUDY OF LARYNGOTRACHEAL TRAUMA AND ITS EMERGENCY MANAGEMENT IN PATIENTS ATTENDING GGH, KAKINADA

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INTRODUCTION

laryngotracheal complex consists of an intricate cartilaginous framework, which is supported by a variety of muscular and ligamentous soft tissue structures, this anatomical complex is the reason for the rarity of laryngeal traumas. In humans the larynx is suspended vertically from the mandible and the skull, protected anteriorly by the strap muscles, inferiorly by the sternum, posteriorly by cervical spine and laterally by the sternocleidomastoid muscles. However, when injury occurs to can lead to severe morbid and mortality. Clinical presentation varies widely from pain, dysphagia, dysphonia or even stridor. Injury to the larynx can range from a simple abrasion, contusion or oedema to fractures of cartilage or complete laryngotracheal separation, A proper evaluation and management is required to restore the three main functions of larynx, which includes airway protection, phonation and swallowing. Therefore, a proper evaluation and management is necessary to prevent morbidity as well as mortality.

AIMS AND OBJECTIVES

1. To evaluate clinical features and its management of patients with laryngotracheal trauma.
2. To discuss the management of the trauma depending on the grade of injury.

MATERIALS AND METHODS

Method of collection of data

A prospective study of 15 patients who presented with laryngotracheal traumas to casualty department in government general hospital Kakinada, Andhra Pradesh state for period of one year from October 2020 to October 2021.

Inclusive criteria

Patients who have presented with both external and internal laryngotracheal trauma includes neck trauma from cut throat hanging, strangulation, RTA and injuries caused by prolonged intubation.

Depending on the severity of the injury, the airway of the patient is secured with tracheostomy if airway was compromised followed by external anatomical restoration. Internal functional restoration was planned later.

Meticulous clinical examination along with routine blood investigations were done
The patient is subjected to

- Radiological investigations such as x-ray neck and chest, CT of neck.
- Video laryngoscopy
- Direct laryngoscopy
- esophagoscopy

Management



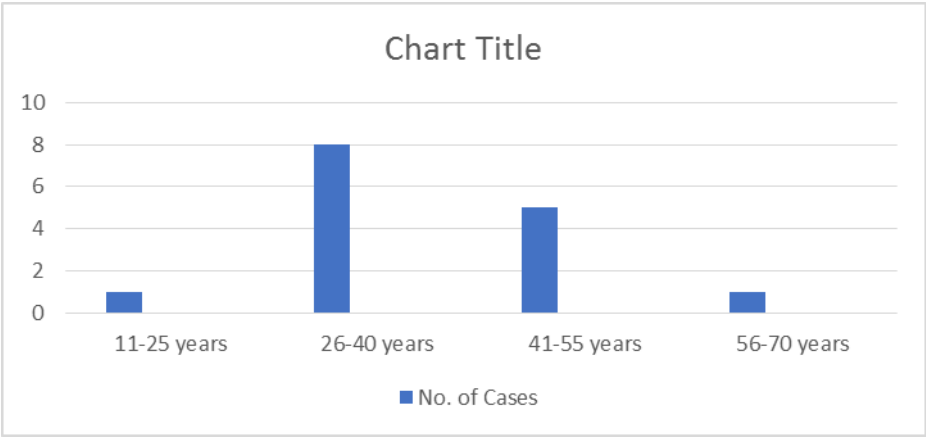
RESULTS

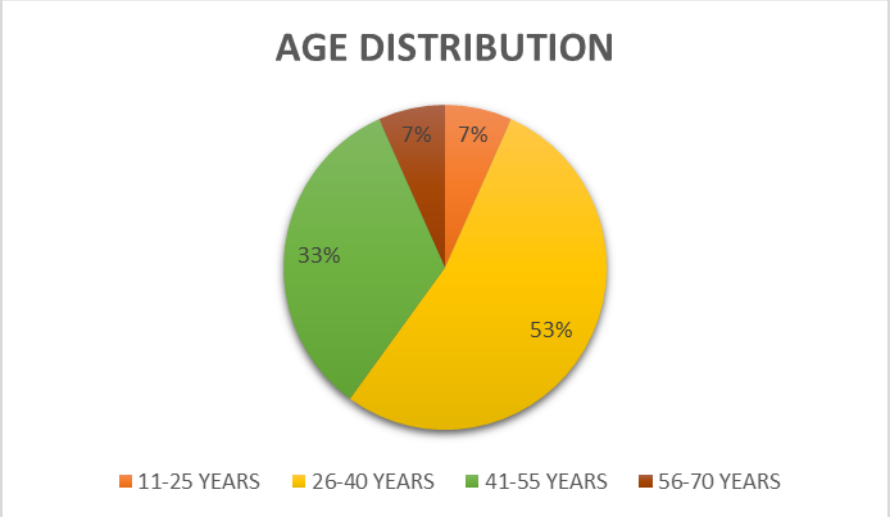
This study was evaluated in 15 patients who presented with laryngotracheal traumas to emergency department in government general hospital, Kakinada, Andhra Pradesh state, during a period of one year from October 2020 to October 2021.

The details of the following date collected

AGE DISTRIBUTION

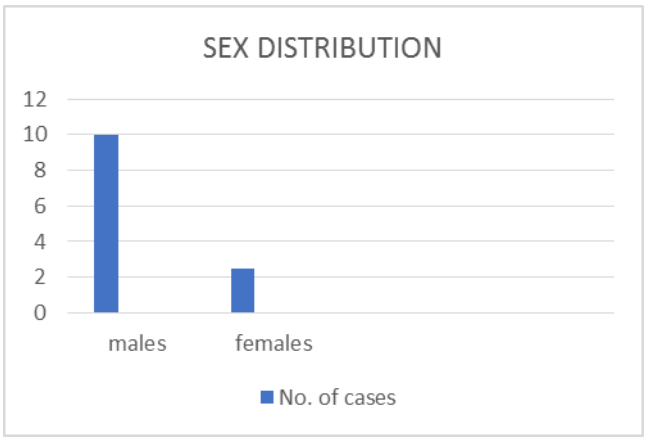
AGE(YEARS)	NO. OF CASES	PERCENTAGE
11-25 years	1	6.6%
26-40 years	8	53.3%
41-55 years	5	33.3%
56-70 years	1	6.6%

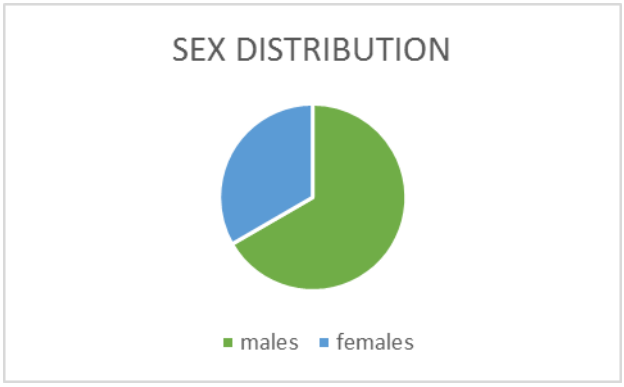




SEX DISTRIBUTION

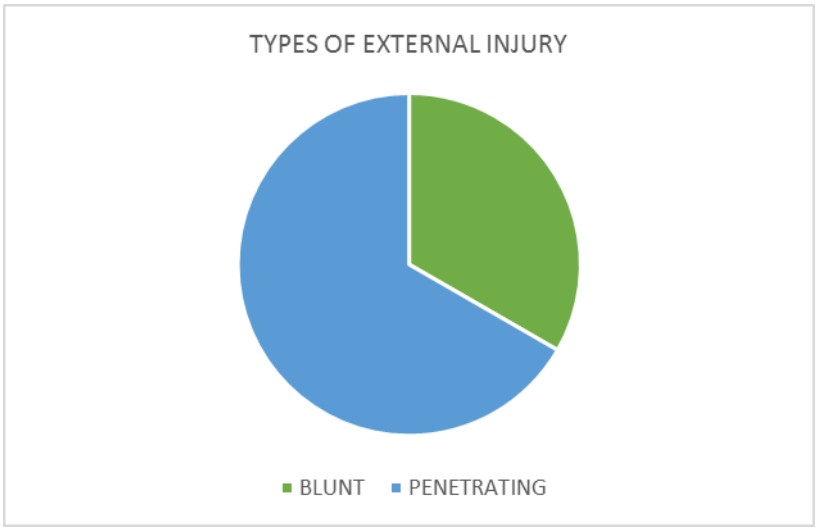
SEX	NO. OF CASES	PERCENTAGE
MALE	10	66.6%
FEMALE	5	33.3%





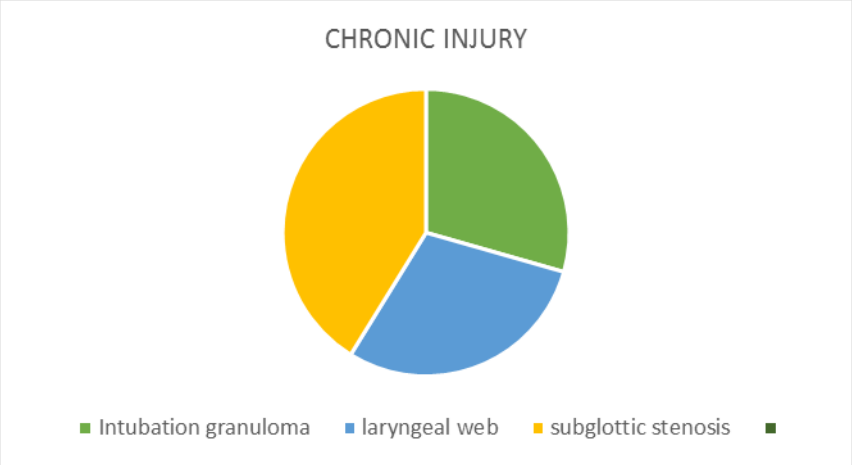
TYPES OF EXTERNAL TRAUMA

TYPE	NO. OF CASES	PERCENTAGE
BLUNT	4	26.6%
PENETRATING	8	53.3%



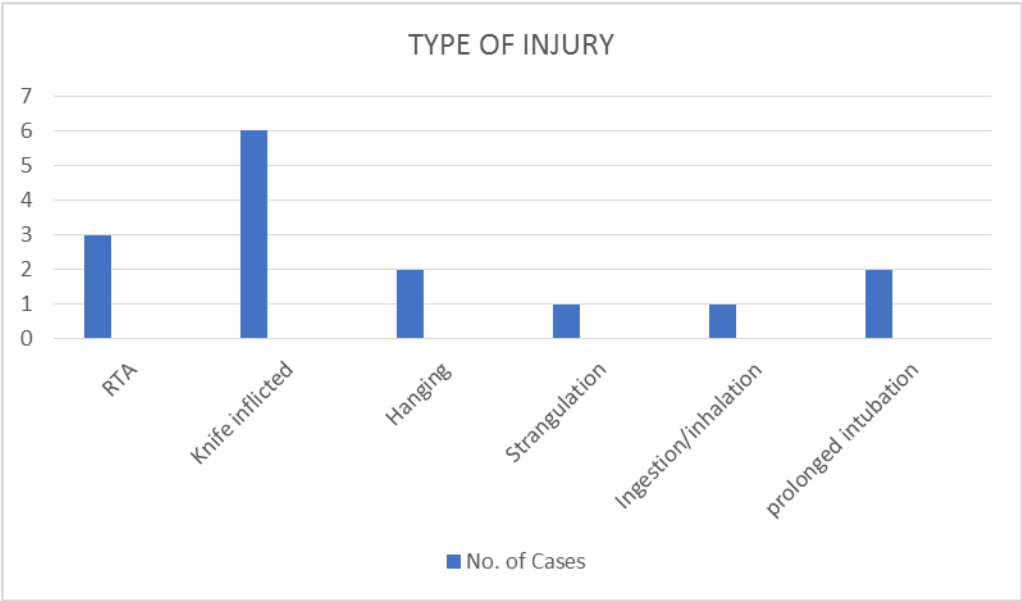
CHRONIC INJURY CAUSING INTERNAL TRAUMA

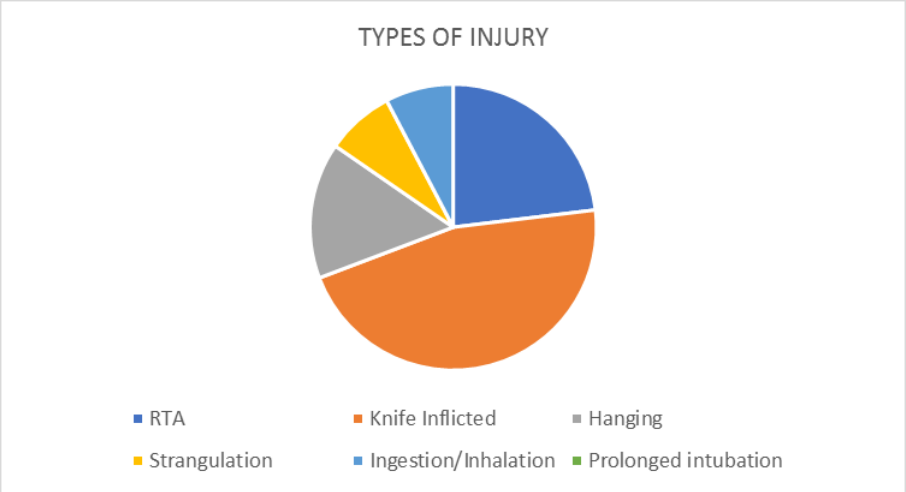
TYPE	NO. OF CASES	PERCENTAGE
INTUBATION GRANULOMA	1	6.6%
LARYNGEAL WEB	1	6.6%
SUBGLOTTIC STENOSIS	1	6.6%



TYPE OF INJURY

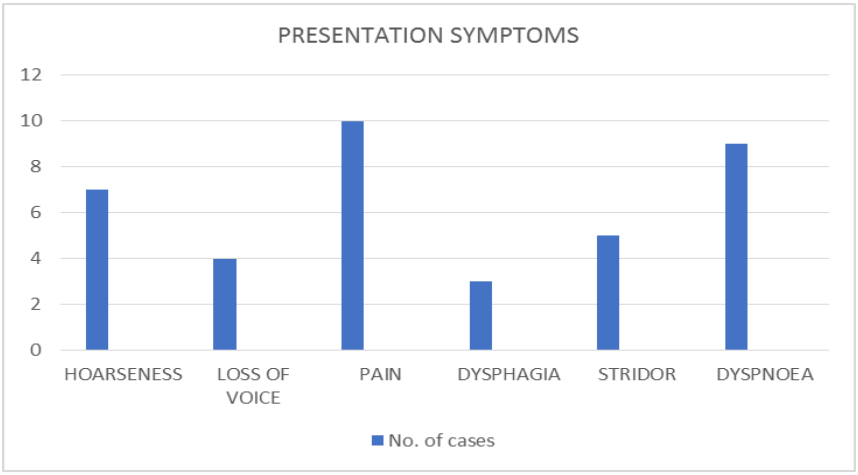
TYPE	NO. OF CASES	PERCENTAGE
RTA	3	20%
KNIFE INFLICTED	6	40%
HANGING	2	13.3%
STRANGULATION	1	6.6%
INHATION/ INGESTION	1	6.6%
PROLONGED INTUBATION	2	13.3%

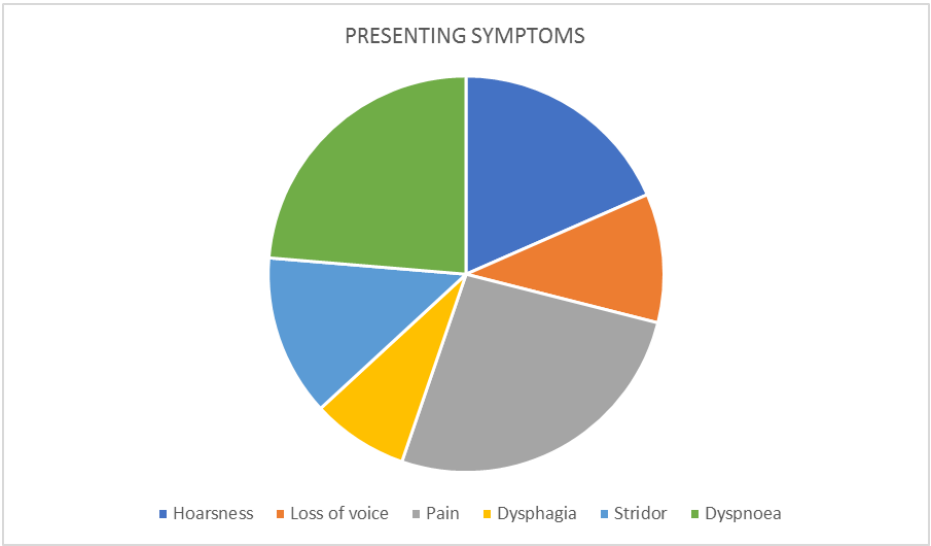




MOST COMMON SYMPTOMS PATIENTS PRESENTED WITH

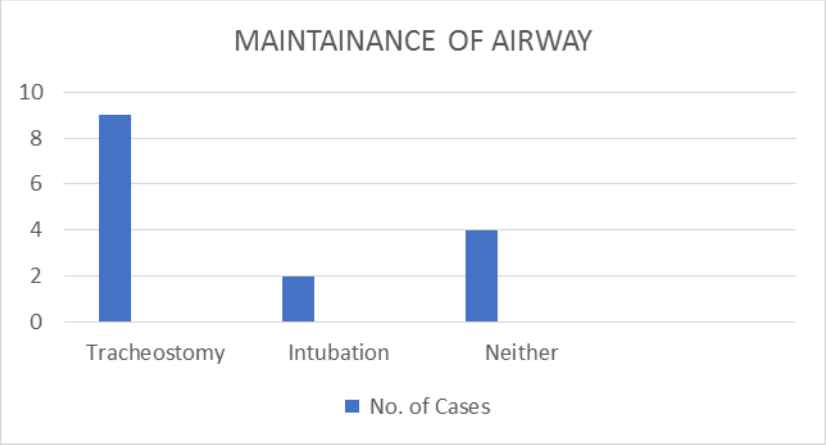
SYMPTOMS	NO OF CASES	PERCENTAGE
HOARSNESS	7	46.6%
LOSS OF VOICE	4	26.6%
PAIN	10	66.6%
DYSPHAGIA	3	20%
STRIDOR	5	33.3%
DYSPNOEA	9	60%





MAINTENANCE OF AIRWAY

AIRWAY	NO. OF CASES	PERCENTAGE
TRACHEOSTOMY	9	60%
INTUBATION	2	13.3%
NEITHER	4	26.6%



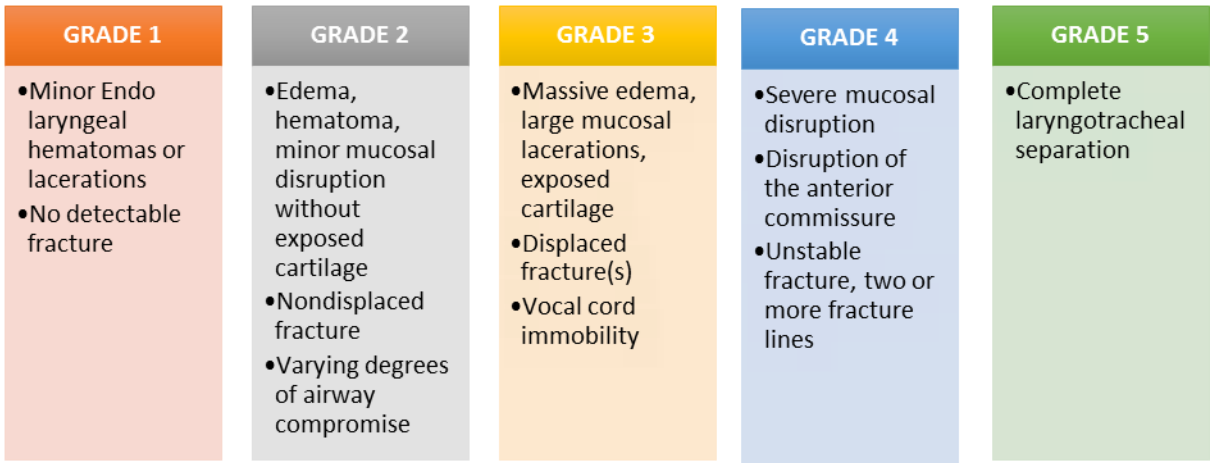
MANAGEMENT OF EXTERNAL TRAUMA

METHOD	NO. OF CASES
Cricothyroid membrane repair	6
Thyrohyoid membrane repair	3
Tracheostomy and observation	9
Only observation	4

MANAGEMENT OF INTERNAL TRAUMA

TYPES	METHOD
Intubation granuloma	Microlaryngeal surgery with laser excision
Laryngeal web	Laser excision and sialistic keel placement
Subglottic stenosis	Laser excision with montegomery sialastic t tube

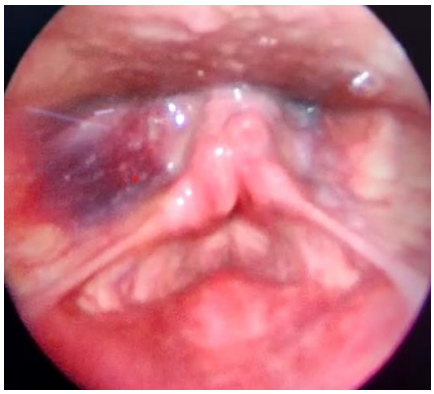
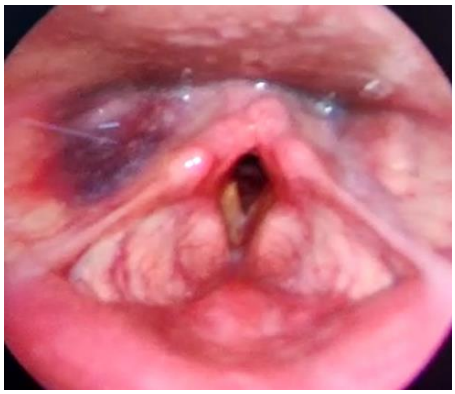
No Of Cases Belonging To Schaefer-Fuhrman Classification Of Laryngeal Trauma



GRADES	No. of Cases	Percentage
1	2	13.3%
2	2	13.3%
3	3	20%
4	4	26.6%
5	1	6.6%

CASE 1

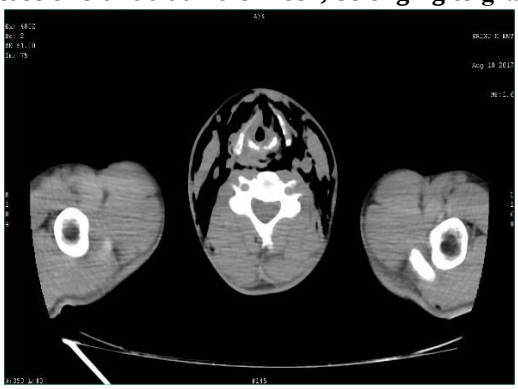
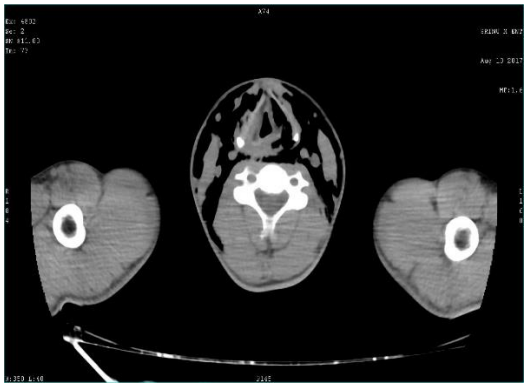
Case of blunt trauma injury belonging to grade 1 Schaefer's classification.

ENDOLARYNGEAL HEMATOMA OF LARYNX

CASE 2

This is case of blunt trauma of neck, belonging to grade 2 Schaefer's classification

CT NECK AXIAL VIEW




SUBLUXATION OF CRICOARYTENOID JOINT

CASE 3

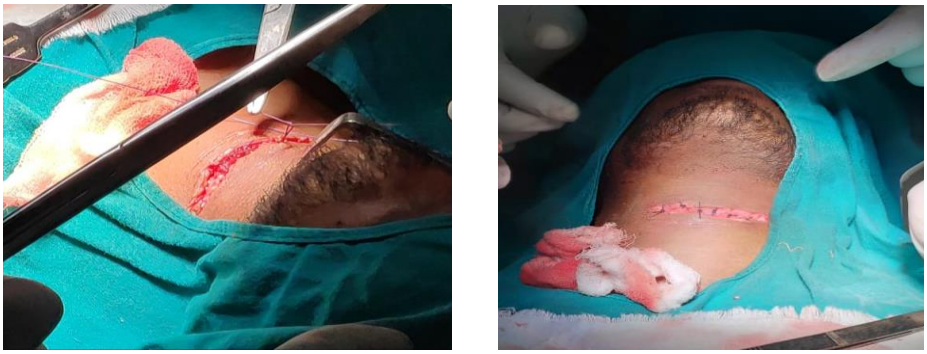
Penetrating neck injury, comes under grade 2 Schaefer's classification



REPAIR OF CRICOTHYROID MEMBRANE



REPAIR OF DEEP FASCIA



REPAIR OF SKIN

CASE 5

This Is a case of suicidal cut throat. Belonging to grade 3 Schaefer's classification



Tracheostomy with repair in schaefer's grade 4 injury

CASE 7
This is a case of suicidal cut throat, belonging to grade 4 Schaefer's classification



Tracheostomy with repair in schaefer's grade 4 injury

DISCUSSION

In this study, 15 patients presenting to the Otorhinolaryngology outpatient Department and emergency department in Government General Hospital, Kakinada with laryngo-tracheal trauma GGH, KAKINADA, Andhra Pradesh state from for a period of one year from October 2020 to October 2021

Majority of the patients belonged to the age group 26 to 40 years age group, with an average mean of 42.5 years of age with 8 patients (53.3%), followed by 41-55 years age group with 5 patients (33.3%), with least in age group of 11- 25 years 1 (6.6%) and age group of 56-70 years 1 (6.6%).

In this study, males are 10 (66.6%) in number, while females are 5 in number with a percentage of 33.3%. males are most common compared to females.

Out of 15 patients 12 of them presented with external injury 80%, 3 of them presented with chronic internal injury 20% Out of 12 patients with external trauma majority of them 8 patients (53.3%) were because of trauma caused due to penetrating injury, rest of them were 4 (26.6%) caused due to blunt trauma 3 cases presented with chronic injury in which one (6.6%) patient had intubation granuloma, One patient had laryngeal web (6.6%), and 1 patient (6.6%) presented with subglottic stenosis.

Most of the external injuries were knife inflicted 6 (40%) followed by RTA 3 (20%), hanging 2 (13.3%). Strangulation 1 (6.6%).

Internal injury was caused in 3 patients 2 (13.3%) of which were caused by prolonged intubation and in 1 (6.6%) patient it was due to ingestion of poison.

Most of the patients 10 (66.6%) presented with pain in the region of injury, followed by dyspnoea 9 (60%), 7 (46.6%) patients presented with hoarseness of voice. 5 (33.3%) patients presented with airway obstruction in whom tracheostomy was done to secure airway. 4 (26.6%) of them presented with loss of voice and 3 patients (20%) had dysphagia.

Tracheostomy was required in 9 patients (60%), in 2 (13.3%) patients' intubation was done to maintain ventilation, rest of them 4 (26.6%) require airway maintenance.

6 (40%) patients with external injury required cricothyroid membrane repair, 3 (20%) of them required thyrohyoid membrane repair, in 9 (60%) of them tracheostomy was required, 4 (26.6%) of them were managed conservatively.

1 patient (6,6%) with intubation granuloma micro laryngeal surgery with laser excision was done, 1 patient (6,6%) with laryngeal web laser excision and sialistic

keel placement was done, 1(6,6%) patient with subglottic stenosis was managed by laser excision with Montgomery T tube insertion.

According to schaefer's grading for laryngotracheal trauma most of them 4 (26.6%) belonged to grade 4, followed by 3 (20%) patients in grade 3, 2 (13.3%) patients presented in grade 1 and 2 (13.3%) patients belonged to grade 2. One (6,6%) patient belonged to grade 5.

CONCLUSION

The main objective of our study is to establish a protocol for different types or laryngotracheal trauma is to secure a safe airway and to achieve a normal voice.

In conclusion, we believe that the management of injuries to the larynx and trachea can be individualized based on the clinical presentation and mechanism of injury.

Early diagnosis and stratification of treatment based on the initial history; physical findings have improved outcomes. Our goal remains preservation of life with restoration of a normal airway and voice.

Patients with blunt injuries can often be managed conservatively with close monitoring in the intensive care unit.

Penetrating injuries will often have associated injuries or airway compromise that will mandate operative exploration.
Various modalities of treatment are available for laryngeal stenosis, for lesion <1cm laser excision is accepted treatment and for lesions >1cm external approach resection and grafting procedures are accepted treatment.

Laryngotracheal trauma is a rare diagnosis, with early treatment and regular follow Up will lead us to a great functional outcome of larynx in terms of airway and voice laryngotracheal trauma is a rare but life-threatening diagnosis in casually when compared to head injuries, as most blunt injuries of neck are concealed and may and in sudden respiratory obstruction.

Emergency department faculty and Otorhinolaryngologists must be prepared and well versed to immediately respond to secure airway of these patients decrease in vehicle speed, road safety measures and decrease in personal stress reduces the chance of laryngeal trauma.

Early the intervention, Better the restoration

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