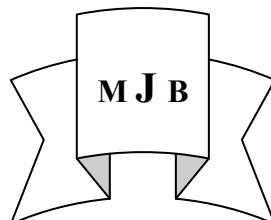


Evaluation of Throat Trauma & its Methods of Management in Babylon Province

Maitham Lafta Witwit Safa Sahib Naji Sultan
Dept. of Surgery, College of Medicine, University of Babylon, Hilla ,P.O.Box 473
IRAQ.



Abstract

Prospective study of patients with direct external throat injuries (upper aerodigestive tract) injuries, received by emergency & surgical department of Hilla general teaching hospital in the last (4) years (from march 2001 to March 2005).

100 case recorded with following criteria of this type of injury as cervical surgical emphysema, dysphonia and/ or stridor, dysphagia, neck pain or tenderness & haemoptysis. Those patients average age was 35 year. 75% were men. Mechanisms of injuries were gunshot wounds 47%, motor vehicle accident 33%.

Clinical picture 90% had neck Pain and / or tenderness, 75% had Hoarseness of voice and / or stridor. Priority of management depend on air way (stable or unstable) and type of injury.

Medical treatment control 50% of Patient, mostly those with stable air way. Early surgical intervention to deal with air way obstruction is needed in most of unstable type.

The failure of management mostly due to:

1. Absence of social education who to deal with this type of injuries at time and place of accident.
2. Absence of portable X-ray device & theater near emergency room
3. Shortage in respiratory care unit staff & equipments.
4. Massive accident.

الخلاصة

دراسة مسبقة تتناول المرضى المتعرضين الى إصابات مباشرة على الرقبة وخصوصا منطقة البلعوم والحنجرة والداخلين إلى شعبة الطوارئ والردهة الجراحية في م . الحلة التعليمي العام من سنة (٢٠٠١ _ ٢٠٠٥) تم جمع ١٠٠ مريض بمواصفات خاصة بهذه الإصابة وهي استسقاء الرقبة، صعوبة التنفس أو بحة الصوت، صعوبة البلع، ألآم الرقبة، نقيى دموي. معدل أعمار المرضى ٣٥ سنة ٧٥% ذكور، ٤٧% من الجروح هي من جراء الانفجارات (عبوات). ٣٣% حوادث مرورية صورة المريض ٩٠% من المرضى يستقبل بحالة الام الرقبة ٧٥% من المرضى بحة الصوت او حالات اختناق. العلاج التحفظي بواسطة الادوية تم انفاذ ٥٠% من المصابين. التدخل الجراحي المبكر ضروري لانقاذ الحالات الحرجة.

Introduction

Throat injury is rare. It has been estimated of 1 in every 14 – 42 thousand emergency room visits. 40% of blunt Trauma victims are estimated to be die at the sence of the accident.

Rapid recognition and security the air way are the keys in management.

The effectiveness of the initial management will determine the final air way and voice thus the otolaryngologist must be conversant with the diagnosis and treatment of this injury.

Mechanism of injury:

It's usually involved either blunt or penetrating Trauma. The

larynx relatively protected by the mandible above, and the sternum below, but may be crushed between blunt object and the cervical spine. strangulation type of injuries result mainly in cartilage fracture while high speed injuries such as motor vehicle or sport related accident often have both cartilage injury as well as soft tissue injuries related to endolaryngeal shearing forces.

Cervical spine injury must always be suspected and excluded with this type of trauma. penetrating injuries usually resulted from gunshot or knife wounds.

Gun shot injury result in massive injury and tissue loss not only in the path of the bullet but also in adjacent structures and that depend on the velocity of the bullet.

* Vascular injuries, pharyngeal or esophageal injuries must be considered and evaluated.

History and physical examination :

The history of blunt or penetrating trauma to the anterior neck should always raise the question of throat injury while severe injuries usually have obvious finding. Stridor, hoarseness of voice, dysphagia, odynophagia and anterior neck pain (are the symptom of Laryngeal Trauma).

On examination subcut. Emphysema, Haemoptysis on examination. Laryngeal tenderness are common finding. Loss of thyroid cartilage prominence and ecchymosis of overlying skin may be noted.

In cases where airway is stable, flexible fiberoptic laryngoscope can provide important information, True vocal cord mobility, soft tissue injuries including oedema, lacerations and haematomas as well as the patency of the airway can be evaluated (also cervical spine and vascular injury must be excluded in this initial evaluation).

Diagnostic imaging :

C.T used in Throat Trauma to see :

1. Integrity of the laryngeal skeleton.
2. Associated cervical spine injuries

The C T not used in those with :

1. Obvious throat trauma need exploration.
 2. Minimal Trauma without physical finding
- cervical spine X-ray, Angiography, Barium oesophagogram may be indicated.

Airway Management :

Stable airway : evaluation of patient Trauma by fiberoptic endoscopy, C T scanning.

Un Stable airway : Tracheostomy or cricothyrotomy, but in pediatric use small size endotracheal intubations after rigid endoscopy than tracheostomy done under general anesthesia.

Medical management :

Select patients with stable airway, injury not involve free margin of vocal cord or anterior commissure, those with undisplaced fracture thyroid cartilage.

24 Hours Airway observation, voice rest, head elevation, Humidification of air, prophylactic steroid to decrease laryngeal oedema, H₂ blockers to decrease Trauma from reflux of gastric acid.

Surgical Management :

1. Patients with severe injuries should be taken to the operation room as soon as possible for direct laryngoscopy and (Bronchoscopy and Oesophagoscopy) Tracheostomy done if indicated.

Via direct Laryngoscopy when there is only, Laryngeal edema or minimal laceration, Haematomas with intact mucosal coverage, no further surgery is indicated, a part from tracheostomy if needed medical management is employed and the airway is maintained via Tracheostomy until patient tolerates prolonged plugging.

2. Those with intact endolarynx with displaced thyroid cartilage fracture Treated by open reduction and internal fixations .

3. Those with large mucosal Laceration or laceration involve anterior commissure or free margin of the cord , and those with exposed cartilage . All those need exploration of larynx plus internal fixation (done in first 24 hr , after injury) , those patient need stenting tube from false cord to first tracheal ring (remove after 2 weeks).

* The goal's at this point is to return all remaining Tissue to its appropriate location and to cover all cartilage , primary closure is usually possible and debridment should be kept to minimum .

In sever laryngeal injuries the best final result may require partial or total laryngectomy .

Pediatric laryngeal injuries have special consideration due to :

1.Small larynx so less oedema lead to stridor .

2.High larynx lead to good protection .

3.The response to medical treatment is batter then adult .

Complication of laryngeal injuries :

1. Granulation Tissue formation – is the most common complication prevented by :

a. Primary closure and cartilage coverage .

b. Limiting use of stents and early removal .

c. removal of developed GT by laser .

2. Laryngeal and tracheal stenosis treated by laser excision or segmental resection .

3. Vocal cords fixation either due to recurrent laryngeal nerve injury or fixation of cricoarytenoid joint , treatment depend on weather the air way is impaired or only the voice .

Patients and Methods

We reviewed the charts of 100 patient during the period from 2001 – 2005 (4 years), admitted to the hospital with the diagnosis of Direct external aerodigestive tract injuries .

Result

Table I

Cause of Trauma	Total No	Hoarsness or Stridor	Neck Pain or Local Tenderness	Hemorrhage or Haemoptysis	dysphagia	Emphysema
Gunshot	47	35	45	30	10	20
Motor Vehicle	33	27	25	4	4	20
Blunt neck Trauma	15	10	15	5	8	6
Stabbing	5	3	5	5	2	4

Table II Early Management

No / of injured patient evaluated by IDL & Fibreoptic endoscopy	Those need GA for evaluation
35	65

Table III Site of injury

Pure laryngeal and or tracheal	Pure hypopharyngeal with air way complication	Oropharyngeal with air way complication	Not identified
37	27	15	21

Table IV respond to treatment

respond to medical only	Need tracheostomy	Need surgical Exploration	Referred to other hospital	Death
50	63	23	15	5

50% of patients were identified with cervical emphysema, cervical crepitation or both, thought to be caused by upper air way injury, the average patient age was 35 years, 75% were men. The mechanisms of injury were motor vehicle accident (33%), gunshot wound (47%), blunt neck Trauma (15%) and stabbing (5%).

24% had dysphagia. 75% were hoarse or had stridor, 35% have haemoptysis, 90% have neck pain and or local tenderness, 9% have massive hemorrhage (mostly in those with cutting injury and gunshot injury).

Locations of injury was laryngeal and / or tracheal in 37%, hypopharyngeal injury with air way complication 27%, oropharyngeal injury with air way complication 15%.

21% of admitted patient not identified site of injury due to

1. Incorrect statistical data.
2. Bad management
3. unavailable of CT scan.

35% of admitted patient tolerated early examination by indirect laryngoscopy and fibreoptic endoscopy. But 65% need GA for evaluation of injury.

The site of injury determined in most of the cases. Those with cervical spinal injury excluded from the study.

Patient need tracheostomy in 83% of those reaching operating room, surgical exploration needed only is 30% of those cases.

Nasogastric tube put in 80% of those cases and failed in (5%) and not indicated in 15%.

50% of total Number of patients treated medically without surgical operation apart from tracheostomy, 15% of cases referred to other hospital. Because of large number of patient come at same time specially in massive accidents.

Complications accrue as sudden death in 5% of cases mostly due to severe hemorrhage, Brain stem injury, undiagnosed cervical spinal injury (# or dislocation of spine above C4), abdominal or chest injury.

Discussion

The Number of cases (100 case) reviewed in last 4 years 2001-2005 of clear direct aerodigestive tract Trauma is very low number when compared with real number of persons effected by this type of injuries in Babylon city because of:

Defect in 1st aid air way management at time and place of accident and also failure in early & smooth transport of injured patients .

From this study show that theirs special criteria of patients with laryngeal Trauma as Hoarseness of voice and / or stridor neck emphysema , neck pain or local tenderness , dysphonia local neck ecchymosis. So when receive patient with one or more of those criteria put him in special priority in management of air way so put the patient in respiratory care unit if have real air way obstruction need to be tracheostomised or intubated to provide air way before doing any other surgery for the patient .

Medical treatment can save good number of patient so we must prepare respiratory care unit with its equipment & good trained staff to deal with this type of injury . Large number of those patient need tracheostomy so try to due this operation whenever we think about it . from this study show theirs good number, of patient exposed to surgical exploration of upper aerodigestive tract at day of Trauma with prefect results .

Most of patient which referred from other hospital presented with vary poor general conditions and not managed properly so we are facing vary big problem with those patient . The shortage in portable X- ray device and department , oximeter , operation theater near emergency room all these lead to loss number of patient due to delayed in clinical and radiological evaluation of injured patient with frequent manipulation from place to other .

Conclusion

The result show that suspected upper aerodigestive tract injury can be

managed without surgery but that have high index of suspicion for air way compromise and associated facial injury must be considered .

So the protocol for evaluation and immediate treatment of air way injury is aggressive initial management high index of suspicion for injury and meticulous repair of the injured air way are equally important steps in the successful management of those patients .

References

1. Schaefer . S.D. the acute surgical treatment of the fractured larynx operative techniques in otolaryngology head and neck surgery . 1990 ; 1(1) ; 6470 .
2. Bailey , B.J , Head and Neck Surgery otolaryngology, laryngeal trauma, J.B.Lippincott ; Philadelphia . ch 74 vol. I . 1993 .
3. Bent , J .P . , and Porubsky , E . S. the management of blunt fractures of the thyroid cartilage otology & head neck surgery 1994 ; 110 (2) ; 195-202 .
4. Schaefer . S.D use of CT Scanning in the management of acutely injured larynx ,Oto . clinics of north America 1991 ; 24 (1) 31-36 .
5. Myer . C.M; orobello .P. cotton . R.T.Bratcher G.O.Blunt Laryngeal Trauma in children laryngoscopy 1987 ; 97;1043048 .
6. Austin, J.R.stanley , R.B.and Cooper .D.S stable internal fixation of fractures of partially mineralized thyroid cartilage Ann otol Rhinol laryngeal 1992 ;10176-80
7. Olson . N.R. Laryngeal Trauma replication M.Academy of otol . Head neck surgery Washington DC. 1982 .
8. Schaefer SD the Treatment of acute external laryngeal injuries " state of the Art " arch otolaryngeal Head and Neck Surgery 1991 ; 117 ; 35 – 39 .