



MANAGEMENT GUIDELINES FOR OCCULT PNEUMOTHORAX: TUBE THORACOTOMY OR CONSERVATIVE MANAGEMENT?

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ABSTRACT

Pneumothorax is a commonly encountered problem in the Trauma Bay. The ED management of pneumothorax depends on their etiology, their size, and clinical stability of the patient. The term occult pneumothorax (OP) is a pneumothorax that is not suspected on the basis of clinical examination or initial chest radiography, but is later detected on computed tomography (CT) scan. Some Surgeons favour placement of a ICD tube for patients with OP, while others favour close observation without chest drainage. This study was conducted both to determine the incidence of OP and to describe its current treatment status in the chest trauma population at an Indian tertiary trauma centre.

KEYWORDS : Occult Pneumothorax, chest trauma, Tube Thoracostomy

INTRODUCTION

Thoracic injury accounts for a substantial proportion of trauma related morbidity and mortality. Rib fracture is the most common blunt thoracic injury, with pneumothorax ranking second. A pneumothorax is a condition that can rapidly evolve and become life-threatening by becoming a tension pneumothorax with cardiorespiratory compromise. Pneumothorax has therefore been identified as a condition for which a basic procedure, percutaneous tube thoracostomy, can prevent significant morbidity and mortality. The term occult pneumothorax (OP) describes a pneumothorax that is not suspected on the basis of either clinical examination or initial chest radiography (CXR) but is subsequently detected on computed tomography (CT) scan.

Although uncomplicated traumatic pneumothorax may be tolerated, the risk of tension and resultant cardiorespiratory compromise makes identification important, especially since the basic procedure of Intercostal Drainage Tube (ICD) insertion can potentially reduce significant morbidity and mortality. Current guidance by the American College of Surgeons Advanced Trauma Life Support advises ICD tube placement for any traumatic pneumothorax, although it suggests that asymptomatic pneumothorax can be managed with observation. It does, however, state that a ICD Tube is required in patients receiving either general anesthesia or positive pressure ventilation (PPV) to avoid a tension pneumothorax. Some surgeons favour placement of a ICD tube for all patients with OP, particularly those undergoing positive pressure ventilation, while others favour close observation without chest drainage.

The role of chest computed tomography (CCT) in trauma evaluation has expanded greatly for chest trauma. The practice of obtaining a CCT on the basis of mechanism, without physical findings suggesting thoracic injury and/or with a negative initial plain chest radiograph (CXR), has become common.

This practice is nurtured by advances in technology such as rapid multi-slice computed tomography (CT). Further, a study of the chest is frequently obtained in the multiply injured trauma patient who has traditional indications for extrathoracic evaluation because it can be accomplished quickly.

METHODOLOGY

This study was a retrospective study done at Mahatma Gandhi Mission's Medical college and Hospital, Kamothe, Navi Mumbai.

This hospital is in a rural area of Western India. A total of 70 patients who presented to the emergency resuscitation room with blunt chest trauma were included in this study. Results were analysed with appropriate statistical tests considering the following parameters Age, Gender, Mode of injury, Types of chest trauma, Management of Chest Trauma

RESULTS

Patients admitted to hospital with Occult Pneumothorax were 70. The age group with maximum occult Pneumothorax was between 21-30 years. Young adults were in majority. There were majority of males (49) and females (21). Most common cause was Road traffic accidents (30) followed by fall from height (21) and Assault (16). Most common associated chest trauma were rib fractures (56) followed by flail chest (10) and Sternum fracture (4)

Total patients managed by ICD insertion were 51 and managed conservatively were 19

Table 1: Age Distribution

Age(in years)	Number of patients presented
0-10	3
11-20	8
21-30	24
31-40	18
41-50	11
51-60	5
61-70	1

Table 2: Gender Distribution

Gender	Total patients
Males	49
Females	21

Table 3: Mode of Chest Trauma

Mode of injury	Total Patients
Road traffic accident	30
Assault	16

Fall from height	21
Workplace injury	3

Table 4: Associated Chest Trauma

Associated Chest trauma	Total Patients
Rib Fractures	56
Flail chest	10
Sternum fractures	4

Table 4: Management of Chest Trauma

Management of Chest Trauma	Total Patients
ICD insertion	51
Conservative management	19

DISCUSSION

In the above study, males (70%) were more affected than females (30%). Literature also suggests that most affected gender is male. Most common cause being Road traffic accidents. Other causes were fall from height, assault, workplace injury.

An Occult pneumothorax with dropping vitals were indicative of the need for ICD insertion. Studies have focused on whether there is a role for conservative management for occult pneumothoraces that are not initially visible on chest radiography. The resultant positive findings, including in patients receiving PPV, have been incorporated into clinical guidelines.

Although these studies have been useful in establishing management pathways for traumatic pneumothorax, they do have limitations. It is difficult to translate their findings into clinical practice in which CT is becoming the first-line investigation. Furthermore, the distinction between overt and occult can be misleading.

Those patients who required immediate interventions represented a more morbid population than those managed conservatively.

CONCLUSION

The study demonstrates that the majority of patients were managed with a chest drain. This study provides support for an interventional approach if the treating surgeon believes that an immediate chest drain is warranted in a patient with a traumatic pneumothorax. Future prospective randomized trials examining the outcomes of an Interventional approach in traumatic pneumothorax, regardless of pneumothorax size or use of PPV, would help clarify which patients are best managed expectantly.

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