

Recent lines in the Management of Esophageal Injuries

An Essay

**Submitted for Partial Fulfilment of Master Degree
in Cardio-Thoracic Surgery**

By

Mukhtar Gamal Metwaly Hanafy
M.B.B.Ch, Ain Shams University

Under Supervision of

Prof. Dr. Ahmed Anwar El-Nori

Professor of Cardio-Thoracic Surgery
Faculty of Medicine - Ain Shams University

Dr. Mohamed Abdel Fatah Abdel Baset

Assistant Professor of Cardio-Thoracic Surgery
Faculty of Medicine - Ain Shams University

Dr. Ahmed Mohamed Mostafa

Lecturer of Cardio-Thoracic Surgery
Faculty of Medicine - Ain Shams University

**Faculty of Medicine
Ain Shams University
2012**

Table of Contents

Title	Page No.
○ List of Abbreviations	I
○ List of Tables	II
○ List of Figures	III
○ Introduction	1
○ Aim of the Study	4
○ Chapter (1): Anatomy and histology of the esophagus.....	5
○ Chapter (2): Pathophysiology of esophageal injuries.....	20
○ Chapter (3): Diagnosis of esophageal injuries.....	52
○ Chapter (4): Foreign bodies in the esophagus	69
○ Chapter (5): Caustic injuries of the esophagus.....	92
○ Chapter (6): Treatment of esophageal injuries	106
○ Summary	147
○ References	153
○ Arabic Summary	___

List of Abbreviation

Abb.	Meaning
CNS	Central Nervous System
CT	Computed Topography
GI	Gastrointestinal
IRAAF	Intra-operative Radiofrequency Ablation of Atrial Fibrillation
LES	Lower Esophageal Sphincter
NPO	Nil Per Os (nothing by mouth)
UES	Upper Esophageal sphincter
VATS	Video-assisted Thoracoscopic Surgery

List of Tables

Table No.	Title	Page No.
1	Endoscopic grading of caustic injury	98

List of Figures

Fig. No.	Title	Page No.
1	Relations of the esophagus	6
2	Constrictions of the esophagus.	7
3	Arterial blood supply of the esophagus	9
4	Venous blood drainage of the esophagus	10
5	Nerve supply of the esophagus	12
6	Lymphatic drainage of the esophagus	14
7	Musculature of the esophagus	16
8	H&E of the esophagus.	19
9	Types of esophageal injury	44
10	Contrast swallow showing a small esophageal leak	48
11	Tracheo-esophageal fistula due to blunt trauma with contrast media in the airways	49
12	Three selected levels of a CT scan with contrast swallow in a 57-year-old man who had a postmetic perforation of the esophagus (Boerhaave's syndrome)	49
13	CT scans of the mediastinum of a 72-year-old woman who had a distal carcinoma of the esophagus	50
14	Magnetic resonance imaging sagittal view. T ₁ -weighted image demonstrating air in the thecal sac	51
15	Chest radiograph finding of a right side hydropneumothorax caused by a perforated esophagus	58
16	Endoscopic view showing catheter passing retrograde through rupture into esophageal lumen and nasogastric tube in esophageal lumen	61
17	Endoscopic image shows multiple lacerations with bleeding at the cardia	61
18	Esophageal Perforation. CT thorax shows bubbles of air and fluid in the mediastinum	62

Fig. No.	Title	Page No.
19	Algorithm for management of suspected ingestion of radiopaque foreign bodies.	80
20	Algorithm for management of suspected ingestion of radiolucent foreign bodies.	81
21	A Roth retrieval net used to remove smooth or round foreign bodies	84
22	Technique of removal of sharp objects using an overtube	85
23	A radiopaque chicken bone is evident in the cervical esophagus.	88
24	Coin lodged at the level of the cricopharyngeus muscle	89
25	Coin lodged at the level of the aortic crossover	89
26	Coin lodged at the lower esophageal sphincter	89
27	A meat bolus is seen above a lower esophageal ring	89
28	A swallowed radiolucent object (plastic guitar pick) in the upper esophagus	90
29	A lower esophageal ring seen following the passage of the meat bolus	90
30	Nonenhanced axial CT scan demonstrates a retained esophageal foreign body.	91
31	Algorithm for treatment of caustic ingestion	101
32	Posteroanterior and lateral views of a patient undergoing a Gastrografin swallow with no perforation seen on this study. Barium esophagogram shows a perforation in the middle third of the thoracic esophagus	102
33	Technique of cervical approach of drainage	109
34	Interrupted mucosal-submucosal and over-over continuous muscularis suture pattern	118
35	Schematic diagram showing the double-crossed suture	119
36	Pleural flap, the pleura is mobilized and transposed around the perforation site or around the entire esophagus	121

Fig. No.	Title	Page No.
37	Intercostal musculopleural flap. The intercostal flap is wrapped around the esophagus and attached with interrupted sutures to buttress the repair site	122
38	Exclusion and diversion: Division of the esophagus is performed, bringing the proximal end out to the skin. The distal esophagus in the neck is closed. A catheter is inserted in the side of the esophagus. The cardia is closed.	124
39	T tube placed in the esophagus, secured to the diaphragm away from aorta and brought out through the chest wall.	126
40	Modified T-tube drainage procedure	127
41	A covered self-expanding metallic stent inserted endoscopically, across the tear site	137
42	Repair of a combined tracheal and esophageal injury. Stenocleidomastoid muscle is placed between the repairs.	144



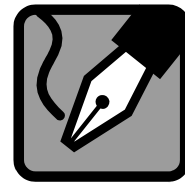
INTRODUCTION





AIM OF THE STUDY





ANATOMY AND HISTOLOGY





PATHOPHYSIOLOGY OF ESOPHAGEAL INJURIES





DIAGNOSIS OF ESOPHAGEAL INJURIES





TREATMENT OF ESOPHAGEAL INJURIES





ARABIC SAMMARY





CAUSTIC INJURIES OF THE ESOPHAGUS

