Use of Indwelling Pleural Catheter in the Management of patients with Malignant Pleural Effusion

Thesis

Submitted for Partial Fulfillment of M.D Degree

In Chest Diseases

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2017

سورة البقرة الآية: ٣٢

In the name of ALLAH, most gracicous, most merciful.

First and above all, my deepest gratitude and thanks to Allah *for achieving that work in my life.*

Words stand short when coming to express my deep gratitude and great thanks to **Prof. Mohamed Ali Farrag,** *Professors of Chest Diseases, Faculty of Medicine Ain-Shams University for their choice of this new topic, continuous encouragement, sincere advice, and co-operation in all steps of this work.*

I am deeply grateful to **Prof. Samar Hassan Sharkawy,** *Assistant Professor of Chest Diseases, Faculty of Medicine Ain-Shams University who devoted her effort and experience to facilitate the production of this work.*

I would like to express my deepest thanks and gratitude to **Prof. Haytham Samy Diab,** *Assistant Professor of Chest Diseases, Faculty of Medicine Ain-Shams University, for his valuable knowledge, great help, and guidance during this work and reviewing my work till the end.*

I'd like to express my thanks to all the chest department members and my collegues for their help.

Finally, I'd like to express my deep thanks to my family who were beside me giving me support to complete this work.

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Abbreviation

ADA:	adenosine deaminase
CA:	cancer antigen
CAPD:	continuous Ambulatory peritoneal dialysis
CEA :	carcinoembryonic antigen
CT :	computerized tomography
CXR:	chest x-ray
EPP:	Extrapleural pneumonectomy
FVC:	Forced Vital Capacity
Hospital LOS:	hospital length of stay
IPC:	indwelling pleural catheter
IV:	intravenous
KPS:	karscoffy performance scale
LDH:	lactate dehydrogenase
MPE :	Malignant pleural effusion
MRI :	Magnetic resonance imaging
NSAIDs:	non steroid anti inflammtory drugs
NSCLC :	non small cell lung cancer
NT-Probnp :	N-terminal pro B-type natriuretic peptide
OPC :	outpatient clinic
PPD:	purified protein derivative
QALYs:	quality adjusted life year
RA :	rheumatoid arthritis
SD :	standard deviation
SLE:	systemic lupus erythematosus
TIPC:	tunneled indwelling pleural catheter
TLC:	total lung capacity
VATS :	Video-Assisted Thoracoscopic Surgery
WHO:	World Health Organization

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INTRODUCTION

Malignant pleural effusion is a common complication of advanced malignancy ***(American Thoracic Society, 2000)***. It constitutes a frequent clinical problem in these patients associated with a poor prognosis and worsening their quality of life ***(Snchez-Armengol and Rodrguez-Panadero, 1993)*** as the vital prognosis is darkened and the survival average decreases by 3 to 12 months ***(Burrows et al., 2000*)**.

Malignant pleural effusion affects 660 patients per million populations each year ***(Marel et al., 1993)*** and in the United States, approximately 100,000 cases of pleural effusions are caused by malignancy ***(American Thoracic Society, 2000)***.

Malignant pleural disease may be primary or secondary, Primary pleural tumors account for about 10% of cases; the most common is malignant mesothelioma ***(Lombardi et al., 2010)***, while secondary involvement of the pleura is much more common, Lung cancer is the most common of secondary tumors, and breast cancer is second and both account for 50-65% of cases while lymphomas, genitourinary, and gastrointestinal tumors represent about 25% ***(Antunes and Neville, 2000***).

Approximately two thirds of malignant pleural effusions occur in women because of the strong association of malignant effusions with breast and ovarian cancer ***(Rusch et al., 2009)***.

The most important symptom associated with malignant pleural effusion is dyspnea ***(Chernow and Sahn, 1977)*** and it is usually subacute, progressing over days and weeks and may be associated with chest discomfort or cough. Symptoms associated with advanced malignancy such as weight loss, anorexia and fatigue can be present. In some cases, the pleural effusion is the initial presentation of an advanced malignancy while in others the effusion occurs as a sign of progression of the cancer ***(Rusch et al., 2009).***

Despite treatment of the underlying malignancy with chemotherapy or radiation therapy, malignant pleural effusions often recur or do not resolve ***(Haas et al., 2000)***, various palliative techniques for the improvement of malignant pleural effusion have been developed to alleviate these respiratory symptoms as repeated thoracocentesis which is a simple and widely used technique but it is insufficient for the treatment of recurring malignant pleural effusion, this is due to the fast and symptomatic reaccumulation of liquid that can occur four days after the thoracocentesis ***(Anderson et al., 1974)***.

Another frequently employed techniques pleurodesis through tube thoracostomy. With this technique, longer lasting effects are obtained provided an adequate drainage of the pleural liquid is achieved, as well as subsequent symphysis of both pleural sheets. Various symphysant agents were used for this. The most commonly currently employed are talc, doxycycline and bleomycin ***(Heffner et al., 2000)***, but this procedure can be painful and requires hospitalization (mean stay was 7 days) ***(Tremblay et al., 2007)***.

In addition, there has also been interest in the use of less invasive techniques of fluid drainage and sclerosis, including the use of smallbore catheters in lieu of larger, standard bore chest tubes. The therapeutic indications for catheter placement have included treatment of empyema, pneumothorax, and drainage of pleural effusions, with or without sclerotherapy ***(Chang et al., 1996)***.

Pigtail catheter is a long, flexible tube that can be guided into the body. The design of this catheter includes small holes that allow for drainage and a coiled end that acts to hold the catheter in place ***(Suzuki et al., 2011)***, use of catheter placement can be using Seldinger technique ***(Ghoneim et al., 2014)***, or guided by ultrasound which ensure that the tube is placed just above the diaphragm to maximize drainage of the effusion ***(Westcott, 1985)***.

Recently, the use of pigtail catheter (flexible and small bore) by the Seldinger technique has emerged as an effective alternative for thoracostomy and pleural drainage. Being a less traumatic procedure, this method creates less pain and smaller scar during and after the placements and possibly fewer procedure associated complications ***(Liang et al., 2009)***.

A novel approach to the treatment of malignant pleural effusion is the use of a chronic indwelling pleural catheter for intermittent fluid drainage which has been reported to be effective in the palliative treatment of patients with malignant pleural effusion and ithas gained popularity over the past few years, ***(Brubacher and Gobel, 2003*)** since its use is effective, safe, and well-tolerated ***(Westcott, 1985).***

An ideal treatment method for malignant pleural effusion should offer arapid and complete relief of associated symptoms. This improvement should be longlasting and without the need for repeat procedures for the duration of the patient's life time, minimally invasive procedures should be favored, and discomfort or side effects of the treatment should be minimal or nonexistent. If at all possible, treatment should be offered on an ambulatory basis minimizing hospitalization time for these patients who may have only a few months to live.

The burden of this treatment should be minimal for both patients and their caregivers, Costs should be minimal and treatment should not interfere with other oncologic therapies. Finally, the treatment should be broadly applicable to a majority of patients suffering from malignant pleural effusion ***(Mac Eachern and Tremblay, 2011)***.