

# COMPARATIVE STUDY BETWEEN UNIPORTAL VERSUS STANDARD MULTI - PORTS VIDEO - ASSISTED THORACOSCOPIC SURGERY IN MANAGEMENT OF SPONTANEOUS PNEUMOTHORAX

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## Introduction

Pneumothorax is an abnormal collection of air inside the pleural space. It is mostly associated with emphysema, asthma, and tuberculosis. It may be spontaneous, traumatic, or iatrogenic. Primary spontaneous pneumothorax (PSP) occurs in young, otherwise, healthy adults without clinically apparent lung disease; while secondary spontaneous pneumothorax (SSP) is a complication of pre-existing lung disease, most commonly chronic obstructive pulmonary disease (COPD). With the advent of high-resolution computed tomography (HRCT), the PSP has come to be better understood and managed. Its etiology can now be identified in the majority of cases. PSP is mainly caused by rupture of a small subpleural emphysematous vesicle (designated a bleb) or of a subpleural paraseptal emphysematous lesion (designated a bulla). Generally, spontaneous pneumothorax is managed surgically in the second attack or in selected patients with the first episode. The surgical approach is the best treatment to minimize the risk of recurrence. There is substantial evidence in the literature demonstrating that the minimally invasive approach is preferred to the thoracotomy procedure since it can reduce the postoperative pain and it is associated with a faster recovery of the physical and work activity. VATS approach has been shown to offer greater advantages regarding postoperative pain and postoperative respiratory function when compared to thoracotomy incision.

## Aim of the work

The aim of this study was to compare between uniportal and multi-ports VATS in the management of spontaneous pneumothorax regarding the duration of surgery, intra-operative complications, post-operative pain, postoperative hospital stay, and patient satisfaction.

## Patients and Methods

This was a prospective randomized clinical study that included 40 patients who were presented with spontaneous pneumothorax; and have been admitted to the Cardio-Thoracic Surgery Department at Alexandria Main University Hospital. Patients were divided into two groups:  
**Group A:** included 20 patients who were managed with uniportal VATS.  
**Group B:** included 20 patients who were managed with multi-ports VATS.

## Results

Table 1: Comparison between the two studied groups according to VAS-Score in each group

VAS	Uniport VATS (n = 20)	Multiports VATS (n = 20)	U	p
Postoperative pain 7 days				
Min. – Max.	3.0 – 9.0	3.0 – 7.0	199.0	0.989
Mean ± SD.	4.90 ± 1.65	4.70 ± 1.03		
Median (IQR)	5.0 (4.0 – 5.50)	5.0 (4.0 – 5.0)		
Post-operative pain 30 days				
Min. – Max.	1.0 – 5.0	1.0 – 7.0	134.50	0.076
Mean ± SD.	2.0 ± 1.21	2.70 ± 1.42		
Median (IQR)	2.0 (1.0 – 2.50)	2.0 (2.0 – 3.50)		
Z	3.953*	3.897*		
P <sub>0</sub>	<0.001*	<0.001*		

IQR: Inter quartile range      SD: Standard deviation      U: Mann Whitney test  
Z: Wilxcon Signed Rank test      p<sub>0</sub>: p value for comparing between the two studied groups  
p: p value for comparing between 7 and 30 days      \*: Statistically significant at p ≤ 0.05

Table 2: Comparison between the two studied groups according to VAS patient satisfaction

VAS patient satisfaction	Uniport VATS (n = 20)	Multiports VATS (n = 20)	U	p
Min. – Max.	1.0 – 9.0	2.0 – 8.0	159.50	0.277
Mean ± SD.	6.90 ± 2.07	6.55 ± 1.54		
Median (IQR)	7.50 (6.0 – 8.0)	7.0 (6.0 – 8.0)		

IQR: Inter quartile range      SD: Standard deviation      U: Mann Whitney test  
p: p value for comparing between the different groups

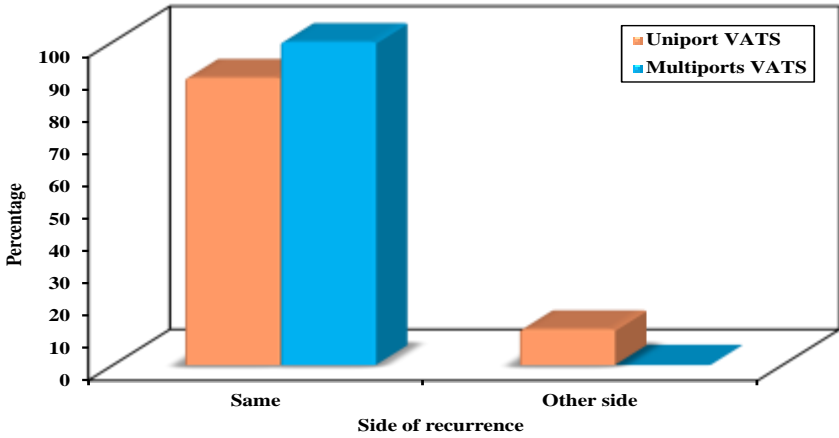


Figure 1:

Comparison between the two studied groups according to side of recurrence

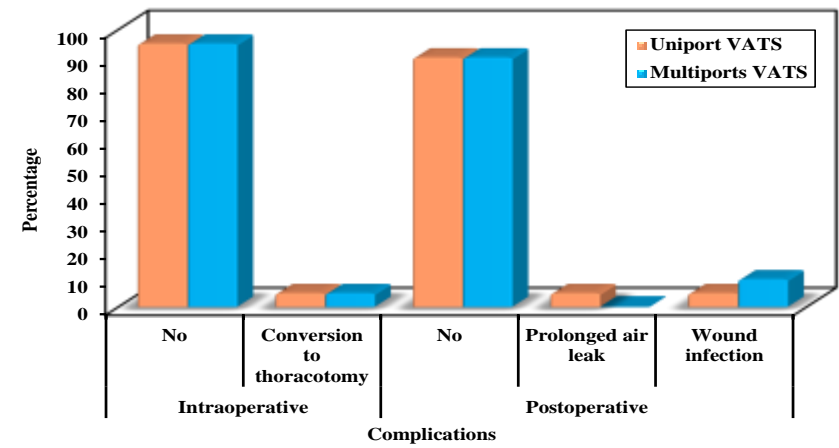


Figure 2:

Comparison between the two studied groups according to complications

## Conclusion

In conclusion, VATS is a milestone approach for surgery for pneumothorax with approved safety. In comparison between Uniport-VATS and multiports VATS, there was no clear evidence about which is superior to another. There were no differences between both techniques in most comparative points that were studied except for a slight advantage regarding the VAS-Score in Uniport- VATS compared to multi-ports VATS.