

SURGERY FOR MALIGNANT PLEURAL MESOTHELIOMA- EGYPTIAN VIEW



Hany Hasan ELSAYED ¹

HISTORY AND BACKGROUND

The first case of a pleural tumour was reported in 1767 by Joseph Lieutand; however, malignant pleural mesothelioma MPM was first characterized as an entity by Klemperer and Rabin in 1931 (1). It took a further 30 years to become widely accepted as a separate cancer entity. The definitive epidemiological study linking mesothelioma to asbestos came originally from South Africa, published in 1960 by Wagner and his colleagues showing that mesothelioma was very prevalent among people living or working in the crocidolite asbestos mine area (2). Later, several studies from the USA, Europe, Australia and Japan verified asbestos inhalation as the etiological cause of mesothelioma (3,4)

Surgical treatment of mesothelioma began to rise in the 1940s with the use of pneumonectomy and pleurectomy. Later in the 1960s, the pleurectomy and decortication procedure was introduced, a surgery that has been resurrected in the last decade. It was originally used back then on patients with trapped lung caused by infections mainly tuberculous empyema. In the 1970s, doctors experimented with another surgery called an extra-pleural pneumonectomy, which was also originally used to treat tuberculous empyema. The mortality rate for the surgery back then was as high as 31%.

Today a thoracic surgeon can be involved in a wide variety of surgeries for mesothelioma ranging from a palliative intent reaching to the most aggressive form with an aim of macroscopic complete clearance. The definition, aim, benefits, risks and evidence for each procedure will be discussed in detail in this chapter.

DEFINITIONS OF DIFFERENT SURGICAL PROCEDURES FOR MPM

There was previous confusion regarding naming the surgical procedure performed for a mesothelioma patient. This has been settled by the IASLC in 2011 (5). A pleurectomy decortication could have a ranged from a procedure of a generous diagnostic biopsy to the other pole of being a radical macroscopic complete resection MCR. Now a pleurectomy decortication P/D is only titled for a radical procedure aiming for MCR by resecting the whole parietal and visceral pleura. If the diaphragm and/or pericardium are completely/partially resected to eradicate disease the procedure is called an extended pleurectomy decortication eP/D. A partial pleurectomy/decortication is the term given for a palliative procedure aiming to achieve pleurodesis or to release a trapped lung caused by mesothelioma. It is usually performed via VATS. Extra-pleural pneumonectomy has retained its definition being a radical en bloc resec-

¹ Dr., Thoracic surgery department, Faculty of medicine, Ain Shams University hanyhassan77@hotmail.com

tients can achieve a better QoL than EPP patients across all measures. Schwartz and his colleagues (36) showed better physical, social function and global health with follow-up for P/D rather than for EPP, while other indicators such as pain and cough were similar. As expected, Forced Expiratory Volume (FEV1) and Forced Vital Capacity (FVC) were higher at follow-up for P/D compared to EPP.

WHAT IS THE FUTURE WITH EVIDENCE FOR SURGERY IN MESOTHELIOMA?

The MARS 2 trial (37) is a multi-centre UK based phase III study which is randomizing patients to receive standard chemotherapy (pemetrexed/platinum) with or without extended pleurectomy decortication EPD. Four surgical mesothelioma units (St. Bartholomew's Hospital in London, Glenfield Hospital in Leicester, Northern General Hospital in Sheffield and Golden Jubilee National Hospital in Glasgow) are expected to treat over 320 patients in the trial referred from more than twenty medical centres. The trial is probably the last hope for surgeons to find evidence-based practice for performing macroscopic complete resection for mesothelioma patients. The trial includes patients with non-favourable, non-epithelioid histology and node positive disease which may leave room for criticism and attribute to poorer prognosis in the surgical arm. However, the nature of random selection may evenly distribute these drawbacks if the sample size is sufficiently large. Results are expected to be released in 2021.

EORTC have proposed a randomized phase II study of PD preceded or followed by neoadjuvant chemotherapy in patient with early stage malignant pleural mesothelioma (38). The study will be based in Belgium and the Netherlands. There should be less barriers to recruitment since both arms of the study end up with the same treatment. However, the results may be of limited value since it is really a trial of chemotherapy rather than surgery. The assumption is also made that EPD is

an established treatment and rather assumes that MARS 2 has concluded that surgery offers benefit over no surgery.

The Mesotrap trial (39) is another ongoing UK based trial looking at the best management for patients with trapped lung due to mesothelioma. Patients will be randomized to receive a thoroscopic palliative partial pleurectomy decortication with an aim to release the lung versus indwelling pleural catheter. Preliminary results are expected to be released next year.

If the MARS 2 trial shows a benefit with surgery over no surgery, thoracic surgeons would probably be looking at a chance for a third surgical trial. This would aim at setting the battle between the two radical MCR procedures; EPP and eP/D; by randomizing patients with early stage resectable disease to receive one of the two procedures. But before the MARS 2 results are released, the whole idea of radical MCR for mesothelioma is at risk of not showing patient benefit.

CONCLUSIONS

Surgery for malignant pleural mesothelioma has a pivotal role in the inter-disciplinary management of MPM at all stages; therefore, thoracic surgeons should be involved in the multi-modality care of these patients. The surgical treatment continues to evolve in parallel with the oncological medical treatment of this malignancy. In the past decade, there has been an inclination to focus on Pleurectomy/decortication as the definitive MCR treatment for this disease.

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