Case Report

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Case Series Report: The Novel Use of a Long Drain Line Post Intraoperative Talc Pleurodesis

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Abstract

First described in 1917, pleurodesis the fusing of visceral and parietal pleura, has a wide range of clinical applications. Talc pleurodesis is now widely used in the management of recurrent pneumothorax or malignant effusion, with a validated safety profile. As a result of chemical irritation to the pleural lining inflammation, adhesion and obliteration of the potential space results. Typically the procedure is completed at the bedside after chest drain insertion.

However, the diagnosis is not clear operative pleural biopsy which is often required to be followed by on table talc insufflation.

At this stage, once the port is closed and suction drainage commenced, large volumes of talc are lost from the thoracic space into the drain. In theory this reduces remaining intra-thoracic talc and thus potential for successful pleurodesis. Traditionally post procedure the drain is frequently removed within the first 24 hour period leaving the expanding lung at risk of developing an air leak. Described in this article is a technique we now use on all suitable talc pleurodesis patients. It employs a lengthened and raised drain line, allowing immediate ongoing suction drainage whilst minimising intrathoracic talc loss.

Keywords: Pleural disease; Mesotheloma; Pleurodesis; Asbestos

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Case Report

Our department is based in a Tertiary Centre with a dedicated Cardiothoracic Unit [1-3]. Talc pleurodesis by far the most common technique we use for managing malignant effusion. Due to legal implications in cases where mesothelioma is the suspected causative agent histological confirmation is required. This usually requires operative pleural biopsy. Most commonly access to the chest cavity is gained by insertion of a VATs port in the anterior auxiliary line, 4th intercostal space. Following assessment of the lung and pleura under direct vision we perform talc insufflation and chest drain insertion. One size 28 or 30 F drain is placed in the apical position.

Level C evidence states that low pressure and high volume suction may benefit pleural effusion drainage [4]. Therefore, traditionally we would have closed and placed the swinging drain on suction producing significant visible talc loss into the drain. As drains occasionally blocked and such significant volumes of talc were being lost we looked for a cost effective way to address the issue. After trial and error we found elevation of drain lines as an effective way of reducing talc in the drain aspirate. We now elevate all suction drains over a drip stand at approximately one and a half meters for the following 23 h post op before being returning to normal position.

This modification of the standard technique manages potential post op air leak, permits fluid and air drainage, allows lung expansion and avoids excess loss of intrathoracic talc. Following talc pleurodesis we use tube extensions to standard chest drains which allows the elevation over a drip stand **(Figure 1)** for the first few hours post op to maximize adhesion of talc to the pleura.

They are then collected to a standard Sahara drain placed on suction. However, in a handful of cases we have also employed the long line in bedside talc pleurodesis through a standard

chest drain set. This is especially effective were patient is too unfit to proceed to theatre for biopsy. We have now been using this technique for the past year in over 50 cases. Usual patient demographic is middle aged to elderly male with mesothelioma secondary to asbestos exposure, though it is equally effective in any malignant effusion. We see such a number of cases due to Belfast's historic shipbuilding past which widely used asbestos right up to the late 1980's.

Discussion

We have noted clinically more full inflation occurring during the first few hours in some cases where the lung did not appear to expand fully intra-operatively. We had no increased length of stay compared to patients in other groups who had standard drainage technique. On average patients were discharged home the second day post-surgery. There is no cost difference in regards to traditional drainage aside from the cost of extra 150 cm of drain piping. As discussed, research is ongoing into the benefits of suction drainage post pleural biopsy. This technique gives the operator the option of employing suction drainage, while reducing risk of drain blockage and talc loss.

By implementing this technique far less talc is visible within the drain aspirate suggesting clinically more talc is retained within the chest cavity. This permits fuller lung expansion and while providing an emergency drain if any sudden air leak develops as the lung expands. Standard risks associated with the technique are as those associated with surgical chest drain insertion. These include bleeding, organ damage and risk of infection. The increased tubing length produces no additional patient risks. As this technique can be used after both bedside talc insufflations via a chest drain or intra-operatively post biopsy we feel that it has a wide range of application in both Cardiothoracic Surgery and Respiratory Medicine **(Figure 1).**

Figure 1 Standard size 28 F drain attached to extension line immediately after talc pleurodesis then elevated over drip stand. Connected to Sahara drain on suction (out of photograph).

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