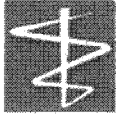


# Rapid Ambulation Post-Thoracotomy with the Atrium Express Mini-500 System



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## Objectives

The need for cost-effective medical treatment has prompted physicians to search for ways to decrease morbidity and expedite appropriate discharge from the hospital. Ambulation as well as the ability to treat patients on an outpatient basis can facilitate these goals. As early as 1976, Mercier and his colleagues demonstrated that outpatient management of pneumothorax with a flutter valve system was safe and economical (1). McKenna and associates also demonstrated that use of a Heimlich valve after lung reduction surgery for emphysema was shown to shorten hospital stay (2). Ponn then took this one step further and demonstrated that the presence of a chest tube does not necessarily warrant an admission, whether there is a leak or not (3). Other groups have investigated the use of other ambulatory chest drainage systems such as the Portex system and the Thoracic Vent as ways to manage a pneumothorax on an outpatient basis (4,5).

## Methods

A small prospective randomized clinical trial in the inpatient setting was performed for patients who had thoracostomy tubes after undergoing thoracotomy with pulmonary wedge resection. The Atrium Express Mini-500 system was compared to the standard water-seal collection system.

Ten patients were followed based on the number of days the thoracostomy tube remained on suction, the number of days post-operatively until ambulation, and the total number of days in the hospital. Five patients were randomized to the control group and connected to the standard collection system. There were four men and one woman who ranged in age from 48 to 71 with the mean age of 58. Five more patients were randomized to the experimental group who used the Atrium Express Mini-500 system. There were four men and one woman in this group with ages ranging from 46 to 78 with a mean age of 64.

Standard mean was calculated for each set of data points in a category. Statistical analysis was done using the Chi square method. Statistical significance was based on  $p < 0.05$ .



Figure 1: Atrium Express Mini-500 system at the bedside during surgery



Figure 2: A patient ambulating with the Mini-500 system in place

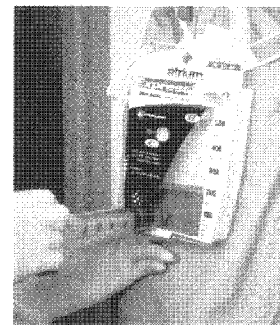


Figure 3: Aspiration Technique for removal of fluid from the collection canister

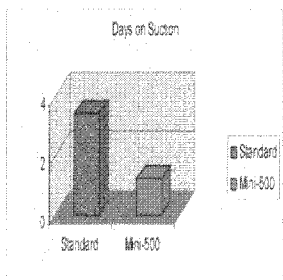


Table 1: The mean number of days for patients remaining on wall suction

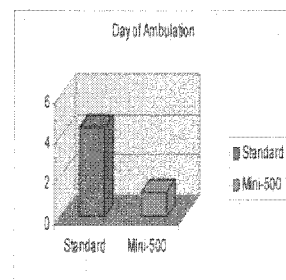


Table 2: The mean number of days until ambulation post-operatively

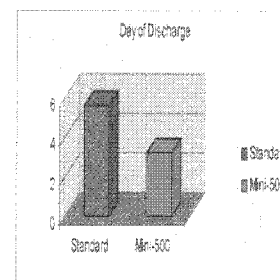


Table 3: The mean time until discharge after surgery

## Results

The mean number of days for patients remaining on suction was 3.4 for those on the standard system versus 1.2 for Mini-500 users ( $p < 0.01$ ) (Table 1). The mean post-operative day until ambulation was 4.4 for the standard system and 1.2 for the Mini-500 system ( $p < 0.001$ ) (Table 2). The mean time to discharge was 5.6 days for those attached to the standard system and 3.2 days for those using the Mini-500 ( $p < 0.001$ ) (Table 3).

## Conclusion

The ability of a patient to ambulate after surgery can be hindered by the attachment of various lines, tubes, and catheters. The bulk of the equipment associated with these attachments can also be cumbersome and interfere with ambulation. The design of the Atrium Express Mini-500 is that of a compact, lightweight system with its own internal seal that is easy to carry.

Because of its design, the Mini-500 allows for earlier ambulation and thus facilitates earlier discharge from the hospital. This in turn decreases the risk of morbidity and concomitant cost of a prolonged hospital stay.

## References

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