Use of Small-Bore Silastic Drains in General Thoracic Surgery

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Study Objective: To evaluate the safety and efficacy of small-bore, silastic drains for patients undergoing general thoracic surgery.

Patients and Methods: Twenty-five patients who received soft, small-bore, silastic drains were compared with 17 patients who received semi-rigid double lumen (DL) tubes retrospectively.

Results: The pain score was significantly lower in patients who received the silastic tubes in video-assisted thoracoscopic surgery (VATS) cases on postoperative days 5 and 6, after continuous epidural analgesia had finished (P=0.018). No specific morbidity was seen in the patients who received silastic tubes.

Conclusion: We considered that soft, small-bore silastic drains were just as effective as traditional DL tubes, but caused less pain especially in VATS cases. (Ann Thorac Cardiovasc Surg 2007; 13: 156–158)

Key words: small-bore, silastic drain, general thoracic surgery

Introduction

The drainage and decompression of the thoracic cavity, after general thoracic surgery, has traditionally been accomplished by placing a semi rigid, large-bore, tube [usually 24 to 28 Fr. (1 mm=3 Fr.) in Japan]. Despite a history of relative safety and efficacy, alternatives to the cumbersome and sometimes painful conventional large-bore chest tubes are now being considered. Preliminary reports suggest that soft, small-bore, silastic drains may be superior to the conventional chest tube in patient’s tolerability, earlier ambulation and pulmonary toilet. In fact, the safety and efficacy in clinical use of small-bore silastic drains were reported in several operations, such as cardiac surgery, hepatobiliary surgery, and so on. With the advance of less-invasive surgery, i.e. video-assisted thoracoscopic surgery (VATS), efforts have focused on minimizing postoperative pain and hastening recovery and new techniques in patient management to encourage earlier recovery.

While increasing patient’s comfort, soft, small-bore silastic drains may also be less likely to injure adjacent structures in the thoracic cavity or chest wall, especially costal nerves. We sought to investigate the difference in early clinical outcomes of flexible, small-bored silastic drains compared to conventional chest tubes after general thoracic surgery.

Patients and Methods

We have used 19 Fr. silastic drains (Fig. 1A, BD: Brake Drain®, Ethicon, Inc., a Johnson & Johnson Company, Somerville, NJ, USA) for thoracic drainage after general thoracic surgery. In BD cases, two 19 Fr. silastic drains were placed through small separate incisions at the completion of surgery (Fig. 1B). One drain was placed around the top of the pleural cavity, and the other was placed on the diaphragm. Drains were attached to the...
suction pomp at a pressure of –13 to –7 cmH2O using Y-
connector (Brake Cardio Connector®, Ethicon Inc., a
Johnson & Johnson Company, Somerville, NJ, USA). The
drains were removed immediately when the amount of
drainage was less than 50 mL for the last 6 hours without
air-leakage or bleeding.

Forty-two patients who underwent general thoracic
surgery at the Department of Surgery and Science, Kyushu
University, between December 2004 and February 2005
were enrolled in this study. The medical records were ana-
lyzed retrospectively. Twenty-five patients received two
19 Fr. BD. Seventeen patients received a 24 or 28 Fr. semi-
rigid double lumen (DL) tube. Twenty-one patients who
underwent VATS were also included 8 segementectomies,
10 partial resections, and 3 resections of mediastinal tu-
ors. Another 21 cases underwent posterolateral thorac-
otomy (PT) including 17 segmentectomies, 2 partial re-
sections, 1 carinal resection, and 1 resection of mediasti-
nal tumor. Among VATS cases, 17 received BD, and 8
received BD in PT cases.

The visual scale analog (Face scale) was used to evalu-
ate postoperative pain. Pain was quantified by a 6-point
pain score (0 = no pain, 5 = maximal pain) on days 1, 2,
3–4, and 5–6 post-operation.

The pain was controlled using continuous administra-
tion of epidural analgesia (lopivacaine, 1 to 2 mL/h) dur-
ing the chest tube drainage, and NSAIDs were given orally
or via a suppository according to the pain.

All comparisons were made using the t-test and P val-
ues less than 0.05 were considered significant.

Results

The drainage period for the patients with BD was signifi-
cantly shorter with 1.9±1.4 days contrary to DL with
2.9±1.6 days (P=0.00132). Patterns of lung resection that
included segmentectomy, lobectomy and pneumonectomy
compared to the partial resection and extirpation of me-
diastinal tumor did not influence the drainage period.
There was no statistical significant differences in the drain-
age period between those who received BD and DL, both
in VATS cases and PT cases. The length of continuous
epidural anesthesia was 1.7±0.8 days in VATS cases in
contrast to 2.8±1.3 days in PT cases (P=0.0023).

The pain score was significantly lower in cases received
BD compared with DL in VATS cases on day 5 and 6
post-operation, when continuous epidural analgesia had
finished (P=0.018, Fig. 2), although there was no statisti-
cal significant difference in the pain score between the
patients with BD and DL in PT cases (data not shown).

No postoperative morbidity or mortality was observed
in this series of patients.

Comments

Postoperative drainage of the thoracic cavity is essential
In conclusion, soft, small-bore silastic drains are effective as traditional DL tubes and cause less postoperative pain especially in VATS cases. We advocate their use in patients undergoing VATS.

References