On-line Case Report

Right postoperative pleural effusion following laparoscopic appendicectomies: a case series

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ABSTRACT

Pleural effusion is not a commonly reported complication of appendicectomy. In our experience, we have performed all forms of appendicitis by laparoscopy (n = 217) since August 2006. We report three consecutive cases of right postoperative pleural effusion, all of which occurred during the immediate postoperative course of a laparoscopic appendicectomy. All three patients presented a perforated appendicitis. The right postoperative pleural effusions seem to be linked to the laparoscopic approach, and can be explained by the cumulative effects of peritoneal lavage, pneumoperitoneum and Trendelenburg position. The first two cases were managed medically by intravenous antibiotic therapy. The third patient required a pleural drainage by thoracoscopy. Surgeons should be aware of this complication when operating perforated appendicitis by the laparoscopic method.

Keywords: Appendicitis – Appendicectomy – Laparoscopy – Pleural effusion

Accepted 25 March 2010; published online 4 June 2010

Laparoscopy is a widely used approach when operating acute appendicitis although it is not yet considered a 'gold standard'. It has several advantages¹ over open appendicectomy procedures. Since August 2006, our department has performed 217 appendicectomies by laparoscopy. Postoperative pleural effusion remains an uncommon complication associated with open appendicectomies,² but has never been reported in laparoscopic appendicectomy to date. We report three consecutive cases of postoperative pleural effusion in laparoscopic appendicectomy.

Case series

Case report 1

A 21-year-old man was operated for a perforated appendicitis complicated by a peri-appendicular abscess. Laparoscopic appendicectomy and peritoneal lavage and drainage were performed. On postoperative day 4, the patient presented a fever and a right thoracic pain. A thoraco-abdominal computed tomography (CT) scan ruled out an intra-abdominal complication, but revealed right pleural effusion and right inferior lobe atelectasia. A

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pleural percutaneous puncture was performed, which yielded clear exudates. The patient recovered after intravenous antibiotic therapy. He was discharged on postoperative day 21.

Case report 2

A 42-year-old woman was operated for a perforated appendix with localised peritonitis. A laparoscopic appendicectomy was performed with a peritoneal lavage without peritoneal drainage. The patient was discharged on postoperative day 3. She was re-admitted on postoperative day 7 with a right lower thoracic pain and dyspnoea. The thoracic CT scan revealed a right pleural effusion and a right inferior lobe atelectasia. A pleural percutaneous puncture was performed and the patient recovered after intravenous antibiotic therapy. She was discharged 8 days later.

Case report 3

A 67-year-old woman without previous surgical or medical history was operated for a perforated appendix with localised peritonitis. The appendix was retrocaecal and perforated. Due to the retrocaecal appendix, a right colonic mobilisation was performed. Appendicectomy followed by peritoneal lavage and drainage was performed. On postoperative day 7, the patient presented a fever and right loin pain. The thoracic CT scan revealed a significant right, pleural effusion (Fig. 1). A pleural percutaneous puncture was performed. Two days later, the thoracic X-ray did not show any improvement. Consequently, a pleural lavage and drainage were performed by thoracoscopy. The patient was discharged 8 days later.

Discussion

Right pleural effusion is an uncommon complication of appendicectomy. In the literature, few reports^{1,3} have been published regarding this kind of complication, following open appendicectomy. It has not been described in laparoscopic appendicectomies to date.

Since August 2006, we have recorded 217 cases of consecutive laparoscopic appendicectomies in our department. In our experience, we report nine cases (4%) of intra-abdominal, postoperative abscesses and no wound abscesses. Those nine complications were all cured by antibiotic therapy and, in three patients, the antibiotic therapy was complemented by a CT-scan-guided percutaneous drainage. Our morbidity results are in accordance with the literature data. The intra-abdominal abscess rate is a controversial subject concerning the

Figure 1 Thoracic CT scan showing a right postoperative pleural effusion (case 3).

laparoscopic approach. For some authors,¹ there are more intra-abdominal abscesses by laparoscopy. For others,⁴ the complication rate is the same between open and laparoscopic approaches. In addition to these well-known complications, we also observed three cases of postoperative, right, pleural effusion amongst our 217 laparoscopic appendicectomies. They all occurred in patients in good overall health and thus cannot be explained merely by patient vulnerability. Likewise, these three cases of pleural effusion cannot be related to inhalation during tracheal intubations as they were not associated with pneumonia. The common factor in all three cases was a perforated form of appendicitis. This form is known to induce major postoperative complications.² Our main hypothesis is that the pleural effusion was secondary to a mechanical irritation of the diaphragm, due to contact with infected abdominal fluids. Another hypothesis is that the presence of a diaphragmatic congenital communication allows the abdominal fluids to contaminate the pleural space. This is the mechanism described in catamenial pneumothorax.⁵ All three cases had undergone a peritoneal lavage. Insufficient pre-operative aspiration after peritoneal lavage or insufficient peritoneal drainage could explain the presence of infected abdominal fluids which entered into contact with the right diaphragm. We have not studied the volume of lavage. However, we suspect that an important volume of peritoneal lavage is likely to favour dissemination of the infected fluids in the peritoneal cavity, especially in cases of perforated appendicitis. Another influential factor may be the position of the patient during the operation and the presence of a pneumoperitoneum. For a better exposure of the operative area, we often put the patient in a slight Trendelenburg position. The cumulative effects of the Trendelenburg position and the pneumoperitoneum are

likely to let fluids run into the right diaphragmatic region. Thus, the liquid can cause diaphragmatic irritation or the pleural contamination through diaphragmatic defects.

Surgeons should be aware of the risk of right pleural effusion after operating perforated appendicitis by the laparoscopic method. During the postoperative course of a laparoscopic appendicectomy, a thorax X-ray or CT scan can be helpful in cases of fever, dyspnoea or thoracic pain in order to diagnose pleural effusion. A percutaneous pleural puncture associated with an intravenous antibiotic therapy is usually sufficient in treating this complication. Early thoracoscopy is, therefore, recommended when the pleural effusion reappears rapidly despite initial treatment to prevent an encysted pleurisy.

Conclusions

Laparoscopy seems to be responsible for an uncommon and undescribed complication – postoperative, right, pleural effusions. Despite these complications, the benefit of laparoscopy remains important, and we shall continue to perform our appendicectomies by this approach. We hope that, with simple precautions such as limiting the volume of the peritoneal lavage, assuring an effective

peritoneal aspiration or drainage, operating under low pressure (< 15 cmH₂O and usually 12 cmH₂O) and avoiding a overly-pronounced Trendelenburg position, we will prevent these complications.

Acknowledgement

The authors thank Ms Antonia Giraud for her editorial assistance.

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