Author's response to reviews

Title: Retained drains causing a bronchoperitoneal fistula: a case report

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Version: 3 Date: 22 November 2010

Author's response to reviews: see over
Dear JMCR Editorial Team:

We thank you for your careful review of our manuscript, MS: 1090032346420559, “Retained drains causing a bronchoperitoneal fistula: a case report.” Herein, please find our responses to each of the editor’s comments. Many of the issues raised by the editors reflect omissions due to the word length limitation; hence, the required changes to the manuscript have been made and accompany this re-submission.

We have added 2 authors. Dr. David Efron and Dr. Alicia Kieninger both operated on the patient. They contributed substantially to the revision of this case report, and have been added as authors in the electronic submission system.

Previous surgery—“please clarify previous surgical management.” The patient had 8 years prior sustained a gunshot wound to the right chest and abdomen. The entrance wound was via the diaphragm into the abdomen, with the bullet traversing segments 8 and 5 of the liver and then into the retroperitoneum. There was no significant bleeding from the right lobe liver wound, but there was a large zone 2 retroperitoneal hematoma on the right. It was obvious that the mid portion of the parenchyma of the right kidney had been essentially obliterated, and the pelvis of the right kidney was involved. The right kidney was therefore resected. The diaphragm injury was then repaired with a running #0 Prolene suture and then two separate 3/16 inch round silastic drains were placed, one over the dome of the liver, the second into the subhepatic pararenal space. The bronchoperitoneal fistula would later form from erosion of these two drains into the diaphragm, connecting the peritoneal and pleural cavities.

Present surgery—“Analyze the HFOV parameters you used...” HFOV was initiated for inability to adequately oxygenate the patient. We discuss the parameters used as well as a brief overview of the literature (new references added), as requested. His PaO2 was 54 mmHg, his pH was 7.20, and his PEEP was 20 on 100% FiO2, with full continuous mechanical ventilation. The frequency was gradually increased form 5 to 10 Hz, the FiO2 was weaned down from 1.0 to 0.4, the mPaw (mean airway pressure) was decreased from 44-36 cm H2O, and the oscillation pressure amplitude (delta P) was decreased from 90 to 30 cm H2O. These changes occurred over the course of 4 days. By day 4, he was discontinued from HFOV, intubated with a double-lumen tube, and differential lung ventilation was provided to minimize the peak inspiratory pressure on the right side (side of the presumed fistula) while sufficiently ventilating the left lung. Differential lung ventilation was accomplished for 48 hours followed by single lumen endotracheal intubation and eventual tracheostomy to facilitate discontinuation of mechanical ventilation. Of note, his tracheostomy scar has since healed and his ostomy was taken down. He was seen recently in clinic and has had a full recovery, even playing basketball daily.

Present surgery—“state alternative bibliographic conservative or surgical ways to treat such fistulas.” Cases of bronchoperitoneal fistulas due to subphrenic abscess often require surgery. Treatment may include debridement of bronchopulmonary tissue, repair of diaphragmatic perforations, drainage of subphrenic infected space and adequate antibiotics. In cases of bronchobiliary fistulas due to iatrogenic biliary trauma, one of the primary goals of treatment includes relief of biliary obstruction if present.

Present surgery—“did the authors perform bronchoscopy...” Multiple bronchoscopies, including bronchoalveolar lavage revealed copious secretions that grew E. coli in more than three samples. No fistula or bronchial injury could be identified via bronchoscopy. Immediately before initiating
HFOV, bronchoscopy was contraindicated since the patient desaturated when removed from the ventilator. He was on maximum ventilatory support at the time HFOV was initiated. Copious secretions were evacuated daily via bronchoscopy following the termination of differential lung ventilation as described above.

Present surgery—“please justify also the treatment of duodenal injury” On exploration, one drain was found eroding into the duodenum causing a chronic duodenotomy that had previously communicated with the sinus tract on the patient’s anterior abdominal wall. The defect was in the lateral wall on the antimesenteric side of the c-loop of the duodenum. The duodenum was inspected carefully intraluminally and the ampulla was identified clearly. It was therefore felt safe to debride the edges and perform a side-to-side duodenoejunostomy with a Roux-en-y limb. A 10-mm Jackson-Pratt drain was left near the anastomosis. There were no signs of anastomotic leakage postoperatively.

Depiction of lung laceration on CT: A distinct lung laceration was never identified by CT. The diagnosis was established clinically based on his surgical anatomy (location of the drains on CT and by clinical exam), persistent pneumoperitoneum, right pneumothorax, continual air leaks in his surgical drains, as well as the repeated recovery of an enteric organism (E. coli) from numerous BAL specimens.

“...use of HFOV to treat the lung mechanics...” HFOV was employed to improve the patient’s oxygenation. One could argue that this might not have been the best initial choice for managing a bronchopleural fistula; however, all conventional and non-conventional ventilatory techniques, including bi-level and airways pressure release ventilation (APRV) failed to improve the patient’s life-threatening hypoxemia. He would not have tolerated differential lung ventilation (to limit the high peak pressures on the side of the fistula) at that juncture since when disconnected from the ventilator for suctioning (less than 15 seconds), he immediately desaturated. To summarize, this patient was incredibly tenuous hemodynamically and highly unstable from an oxygenation and ventilation standpoint. Efforts were made to aggressively increase the frequency during HFOV to provide better lung protection while the underlying pneumonia, pleural effusion, and acute respiratory distress syndrome (ARDS) was reversed. The brief period of differential lung ventilation likely helped decrease airway pressures on the right, allowing the diaphragmatic and bronchopleural defects to close.

“...present data of leak during conventional ventilation...” As described above in point 6, the diagnosis was made clinically.

We thank you for the opportunity to publish in your outstanding journal. Should you have any further editorial concerns or requests, we will respond promptly.

Sincerely,

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