Laparoscopic trocar management of a giant paraovarian cyst: a case report [version 1; peer review: 2 approved]

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Abstract
A 17-year-old woman had undergone exploratory laparotomy because of a huge cystic pelviabdominal mass equivalent of 36 weeks' gestation. A closed system drainage maneuver was applied via using a laparoscopic trocar to drain a revealed large left paraovarian cyst. This maneuver was found to be a simple and effective method to safely aspirate giant paraovarian cysts; thus allowing their total excision.
Introduction
Paraovarian cysts occur in the broad ligament between the ovary and the tube, predominantly arising from mesothelium covering the peritoneum (mesothelial cyst) but occasionally also from para mesonephric tissue (paramesonephric cysts or Mullerian cysts) and rarely from mesonephric remnants (mesonephric cysts or Wolffian cysts)\(^1\). Paraovarian cysts, constitute 10–20% of all adnexal masses\(^2\). Some paraovarian cysts may reach a large size with possible complications like torsion and rupture\(^3\). These cysts are usually benign with rare incidence of malignant types\(^4,5\). Here, we present a case of unusually extensive proportions.

Case presentation
Consent
Written informed consent for publication of the clinical details and/or clinical images was obtained from the patient.

A 17 year old virgin presented with diffuse abdominal pain. History revealed a gradual increase in an abdominal swelling over the preceding 6 months. Physical examination showed a non tender tense cystic pelviabdominal mass of 36 weeks gestational size. Computerised tomography revealed 25×26 cm left ovarian simple cyst with clear contents and no septae. Serum CA125 levels were normal. Other tumor markers were not performed due to financial constraint. Through a subumbilical midline incision, a huge smooth cystic mass overlying the whole abdominal cavity was found. The cyst was isolated from its surroundings with gauze packs. A loose purse string suture was placed in the lowest accessible part of the cyst. A 5 mm laparoscopic trocar with a side track off its main sleeve was connected to a high pressure suction irrigation device via a rubber tube; the trocar was then inserted through the center of the suture which was subsequently stretched to fit around the sleeve. This created a closed system to drain the cyst. The trocar was removed leaving its sleeve in place and suction drained eight liters of clear watery fluid. The collapsed cyst was found to be left paraovarian which was exteriorized and the trocar sleeve was removed. The purse string suture was tightened to close the trocar opening. The left broad ligament was opened and the cyst wall was completely removed from the broad ligament, Figure 1. The redundant ligament peritoneum was excised and subsequently reconstructed with preservation of the tubal integrity as seen in Figure 2. The patient had an uneventful postoperative recovery.

Postoperative histology reported simple benign serous cyst of mesothelial origin. The peritoneal fluid showed proteinaceous material entangling few lymphocytes and mesothelial cells with no evidence of malignancy.

Discussion
Huge paraovarian cysts are uncommonly reported in the literature. On revising the literature, there were three case reports which had addressed comparable large paraovarian cysts but with implementation of larger incisions extending over the umbilicus for cyst extraction and excision without a policy to decrease its size before its exteriorization\(^6\)\(^7\). However, a case report for three adolescents with large paraovarian cysts had addressed decompression technique before cyst externalization and excision but in a different way\(^7\). In our case report we had dealt with such a huge cyst in a way not only to avoid morbidity of extending surgical incision but to guard against the risk of spillage of cyst contents as well. Concerning the endoscopic role, Darwish et al. reported a series of paraovarian cysts which had been excised laparoscopically but were smaller in size with the largest not more than 13 cm\(^8\). However, there were two reports of large paraovarian cysts removed laparoscopically where in the first one, it was associated with acute lower abdominal pain while in the second it was associated with pregnancy\(^11,12\). We think that in all these laparoscopically operated cases, the implemented cyst decompression procedure before its removal had less control and precautions during it and in turn more risk of cyst spillage than our mentioned maneuver. It was thought that laparoscopy would be technically difficult in this case due to huge size of the cyst reaching close to xiphesternum. Direct abdominal entry with a Veress needle or trocar may have traumatized the cyst leading to risk of spillage of its content. Through laparotomy we employed a closed drainage system and safely aspirated the cyst without spillage of its content.
Conclusion
Open surgery remains the gold standard route to deal with giant paraovarian cysts. Aspiration of the cyst using a closed system followed by excision is a safe and effective treatment.

Author contributions
MK prepared the framework of the case report, introduction, discussion and references. TS was the surgeon and prepared the presentation of the case in the manuscript. MZ assisted during the surgery and helped preparing the presentation of the case in the manuscript.

Competing interests
No relevant competing interests were disclosed.

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References
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✔️ Daniel Kruschinski
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This case is interesting and shows the ability to manage big ovarian cysts laparoscopically. Important issues during the procedure, like the closure of the cyst incision site with sutures to prevent spillage, were correctly addressed.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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An interesting case report that may help others when they come to deal with similar cases. A little more detail in the other methods alluded to in the laparoscopic cases might be helpful. The grammar and language needs editing.

Competing Interests: No competing interests were disclosed.
I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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