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# Laparoscopic adnexectomy Under Regional Anesthesia: it is possible!

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1 **Abstract:**

2 At present, the majority of laparoscopic operations are performed under general  
3 anesthesia, as it controls surgical pain and improves patient comfort using  
4 pneumoperitoneum and the Trendelenburg position. However, some laparoscopic  
5 procedures, such as adnexectomies, can potentially be performed under epidural  
6 anesthesia with a purposefully selected and motivated patient managed by prepared  
7 surgical and anesthesia care teams working together effectively. This study reports  
8 the case of a 63-year-old female patient with major respiratory failure who underwent  
9 laparoscopic bilateral adnexectomies under epidural anesthesia.

10

11 *Keywords:* Laparoscopy; epidural anesthesia; bilateral adnexectomies

12

13

14 **Introduction**

15 Laparoscopic surgery has advanced remarkably in recent years, resulting in reduced  
16 morbidity and shorter hospital stays compared with open surgery. Despite challenges  
17 from the expanding array of laparoscopic procedures performed with the use of  
18 pneumoperitoneum, anesthesia has remained poorly changed.

19

20 Currently, most laparoscopic operations are performed under general anesthesia,  
21 which controls surgical pain and improves patient comfort via pneumoperitoneum  
22 and the Trendelenburg position. However, several large, retrospective studies have  
23 questioned the widely held belief that general anaesthesia is the best anaesthetic  
24 method for laparoscopic surgery, instead suggesting that regional anaesthesia could  
25 be a reasonable choice in certain settings (1–4). The present work reports the  
26 specifics of a case that demonstrates the feasibility of conducting laparoscopic  
27 adnexectomies under epidural anesthesia.

28

29 **Materials and Methods**

30 A 63-year-old patient, who had poliomyelitis during childhood with sequelar major  
31 respiratory failure, was seen in our hospital for a suspected large right ovarian cyst  
32 suspicious to be a borderline ovarian tumour. After concertation between the surgical

33 and anaesthesia care teams, we decided to proceed to laparoscopic exploration and  
34 surgery under loco-regional analgesia.

35

## 36 **Results**

37 Combined spinal epidural anaesthesia was performed at the L4-L5 level; 5 mg of  
38 hyperbaric bupivacaine and 2.5 µg of sufentanil were injected by spinal needle. An  
39 epidural was then inserted and anaesthesia was continued by lidocaine infusion.  
40 Oxygenation was given throughout the surgery by high-flow humidified nasal  
41 oxygenotherapy (Optiflow©). No intravenous sedation was necessary.

42

43 Pneumoperitoneum was initiated using an open entry technique at the umbilicus and  
44 achieved with slowly increasing low pressure from 6 to 8 mm Hg. The patient was  
45 placed in a minimal Trendelenburg position (10–15°). We placed then three operative  
46 trocars under the umbilicus, and in right and left iliac fossae. Laparoscopic  
47 examination revealed a large right ovarian cyst, while the uterus and left adnexa  
48 appeared normal. Two peritoneal nodules with possible carcinomatosis were also  
49 noted. The right diaphragmatic cupola was sprayed with 20 mL of ropivacaine. All the  
50 surgery was realized with a 8 mm Hg pressure. The two peritoneal nodules were  
51 easily removed, and the bilateral adnexectomies were performed laparoscopically.  
52 The suspicious right ovarian cyst was placed into an endoscopic bag and extracted  
53 by enlarging the suprapubic incision (3–4 cm).

54 The surgery was uncomplicated, and the post-operative course was uneventful. The  
55 postoperative pain was evaluated, and was inconsiderable (EVA always < 3). The  
56 recovery was really fast, and the patient was accordingly discharged home on post-  
57 operative Day 1. Pathological analysis revealed a borderline tumor of the right ovary;  
58 the remaining analysis did not reveal any malignancies. The patient had no  
59 complaints at the post-operative consultation, and was really satisfied.

60

61

62 **Video 1: Laparoscopic procedure, and view of the operative room**

63

64 **Discussion**

65

66 The well-known benefits of regional anaesthesia include reduction of general  
67 anaesthetic side effects, which include nausea, vomiting, sore throat, dental injury,  
68 sedation, postoperative atelectasis and hypoventilation. This allows for earlier  
69 cognitive recovery in the immediate postoperative period.

70

71 Most reports of spinal anaesthesia in laparoscopic surgery involve laparoscopic  
72 cholecystectomy (1,3–6), with few cases of appendectomy or hysterectomy  
73 presented (1,7). However, data on laparoscopic cholecystectomy are not completely  
74 applicable to gynaecologic surgery given that the former requires a reverse  
75 Trendelenburg position to achieve favorable pulmonary dynamics. Conversely, the  
76 Trendelenburg position needed for most gynaecologic laparoscopic procedures can  
77 inhibit adequate ventilation. Indeed, it might be difficult for patients to breathe against  
78 the pneumoperitoneum and viscera, particularly those with major respiratory  
79 insufficiency. During conventional laparoscopic surgery under general anaesthesia,  
80 surgeons depend on muscle relaxants and paralysis to facilitate peritoneal  
81 insufflation and maintain a steady field for surgery. Epidural anaesthesia can provide  
82 muscle relaxation as well, but not to the level achieved with paralytic agents.

83

84 It is also important to use the least possible degree of Trendelenburg. In our  
85 experience, a 10–15° tilt is sufficient to retract the bowel and provide correct  
86 visualisation. To minimise shoulder pain and decrease respiratory function, low CO<sub>2</sub>  
87 flow and low pressure (< 6 mmHg) were initially used before slowly being increased  
88 to high flow and higher pressure (8 mmHg). In the literature, low-pressure (< 10  
89 mmHg) insufflation is generally preferred (3), with some researchers recommending  
90 a markedly low pressure, such as 4 mmHg (2). Scott and Slawson (8) detected no  
91 significant changes in minute volume, PaCO<sub>2</sub> or blood pH during gynaecologic open  
92 surgery under epidural anaesthesia in the horizontal Trendelenburg position.

93

94 No data are available concerning the appropriate levels of epidural anaesthesia to be  
95 used in gynaecologic laparoscopic surgery. In laparoscopic cholecystectomy, a  
96 satisfactory analgesic effect was obtained with epidural anaesthesia up to the level of  
97 Th7 with concurrent general anaesthesia [11]. Our data suggest that epidural  
98 anaesthesia up to the level of Th8 provides sufficient analgesic for gynaecologic  
99 laparoscopic surgery.

100

101 Right shoulder pain was also prevented by spraying ropivacaine on the undersurface  
102 of the diaphragm, as we always do for all laparoscopic procedures (9).

103

104 Successful laparoscopic pelvic surgery under regional anaesthesia also depends on  
105 appropriate management of pain, anxiety and expectations. In the present case,  
106 communication with an empathetic anaesthesiologist, nurses and surgeon during the  
107 surgical process may have helped reduce the patient's anxiety. Additionally, the  
108 operating room staff kept traffic and noise levels to a minimum during the procedure.

109

110 One of the most recent gynaecologic procedures realized under epidural analgesia  
111 was an hysterectomy, which was due to the patient's preference (10). However, there  
112 was no choice in the present case as it was necessary to avoid general anaesthesia  
113 and tracheotomy intubation given the patient's respiratory dysfunction.

114

115 The cost-effectiveness of such a surgical procedure should be evaluated. In our case  
116 reported, the surgery was uneventful and lasted the usual duration for adnexectomy,  
117 but more data about the cost-effectiveness of laparoscopic procedures under  
118 epidural analgesia should be analyzed.

119

120 **Conclusion:** Laparoscopic adnexectomies under epidural anaesthesia seem to be a  
121 feasible procedure in a purposefully selected and motivated patient. However, such  
122 procedures need be carefully managed by a prepared surgical team and anaesthesia  
123 care team, with efficient and effective collaboration between the two.

124

125 1. Donmez T, Erdem VM, Uzman S, Yildirim D, Avaroglu H, Ferahman S, et al.  
126 Laparoscopic cholecystectomy under spinal-epidural anesthesia vs . general  
127 anaesthesia: a prospective randomised study. Ann Surg Treat Res.  
128 2017;92(3):136.

- 129 2. Kuramochi K, Osuga Y, Yano T, Momoeda M, Fujiwara T, Tsutsumi O, et al.  
130 Usefulness of epidural anesthesia in gynecologic laparoscopic surgery for  
131 infertility in comparison to general anesthesia. *Surg Endosc* [Internet]. 2004 May  
132 [cited 2018 Aug 14];18(5). Available from:  
133 <http://link.springer.com/10.1007/s00464-003-8227-5>
- 134 3. Pursnani KG, Bazza Y, Calleja M, Mughal MM. Laparoscopic cholecystectomy  
135 under epidural anesthesia in patients with chronic respiratory disease. *Surg*  
136 *Endosc*. 1998 Aug;12(8):1082–4.
- 137 4. Zhang H-W, Chen Y-J, Cao M-H, Ji F-T. Laparoscopic cholecystectomy under  
138 epidural anesthesia: a retrospective comparison of 100 patients. *Am Surg*. 2012  
139 Jan;78(1):107–10.
- 140 5. Kejriwal A, Begum S, Krishan G, Agrawal R. Laparoscopic cholecystectomy  
141 under segmental thoracic spinal anesthesia: A feasible economical alternative.  
142 *Anesth Essays Res*. 2017;11(3):781.
- 143 6. Lee JH, Huh J, Kim DK, Gil JR, Min SW, Han SS. Laparoscopic  
144 cholecystectomy under epidural anesthesia: a clinical feasibility study. *Korean J*  
145 *Anesthesiol*. 2010;59(6):383.
- 146 7. Singh RK, Saini AM, Goel N, Bisht D, Seth A. Major laparoscopic surgery under  
147 regional anesthesia: A prospective feasibility study. *Med J Armed Forces India*.  
148 2015 Apr;71(2):126–31.
- 149 8. Scott DB, Slawson KB. Respiratory effects of prolonged Trendelenburg position.  
150 *Br J Anaesth*. 1968 Feb;40(2):103–7.
- 151 9. Bourdel N, Bolandard F, Bonnin M, Botchorisvili R, Tran X, Canis M, et al.  
152 Comment je fais... une prise en charge multimodale de la douleur lors d'une  
153 cœlioscopie. *Gynécologie Obstétrique Fertil*. 2008 Dec;36(12):1241–3.
- 154 10. Moawad NS, Santamaria Flores E, Le-Wendling L, Sumner MT, Enneking FK.  
155 Total Laparoscopic Hysterectomy Under Regional Anesthesia: *Obstet Gynecol*.  
156 2018 Jun;131(6):1008–10.