

Laparoscopic Cholecystectomy for a Patient with a Lumboperitoneal Shunt: A Rare Case

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Rezumat

Colecistectomie laparoscopică pentru un pacient cu șunt lumboperitoneal: caz rar

Un factor rar care poate duce la complicații în cursul perioperatoriu al colecistectomiei laparoscopice este poziționarea prealabilă a unui șunt lumboperitoneal (LP). Până în prezent au fost publicate doar două articole care să prezinte această situație. În cadrul acestei lucrări noi raportăm un pacient de gen feminin, în vârstă de 41 de ani cu boala Gall Stone și poziționare de șunt lumboperitoneal în anul precedent datorită unei hipertensiuni intracraniene idiopatice. Acesta este un sindrom de presiune intracraniană ridicată fără niciun fel de cauză cunoscută care afectează în general tinerele femei obeze. Pacientul este operat folosindu-se un port standard de poziționare și insuflare peritoneală. Perioada postoperatorie a fost favorabilă iar pacienta a fost externată la scurt timp după procedură. Datorită creșterii incidenței și prevalenței obezității, numărul de pacienți chirurgicali cu caracter general cu șunt LP cel mai probabil va crește. În baza experienței noastre și a dovezilor din literatura de specialitate concluzionăm că efectuarea unei laparoscopii pentru un pacient cu șunt LP este o operațiune sigură.

Cuvinte cheie: șunt lumboperitoneal, hipertensiune intracraniană idiopatică, colecistectomie laparoscopică

Abstract

A rare factor that can complicate the perioperative course of laparoscopic cholecystectomy is previous placement of a lumboperitoneal (LP) shunt. Thus far, only two articles describing this situation have been published. Here, we report on a 41-year-old female patient with gallstone disease and a LP shunt placement in the preceding year due to idiopathic intracranial hypertension. It is a syndrome of increased intracranial pressure without any known cause that mainly affects young obese women. The patient was operated upon using standard port placement and peritoneal insufflation. The postoperative period was uneventful and the patient was discharged shortly after the procedure. Due to the increasing incidence and prevalence of obesity, the number of general surgical patients with a LP shunt will likely increase. Based on our experience and evidence in the literature, we conclude that performing a laparoscopy for a patient with a LP shunt is safe.

Key words: lumboperitoneal shunt, idiopathic intracranial hypertension, laparoscopic cholecystectomy

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Introduction

Laparoscopic cholecystectomy is currently the most frequent routine procedure in general surgery practice. Although comorbidities and preceding medical history should always be considered, these factors rarely change the course of surgical management. One rarely present factor is the previous placement of a lumboperitoneal (LP) shunt, which might explain the paucity of literature on the subject. Several articles describing laparoscopic procedures in the presence of ventriculoperitoneal (VP) shunt have been published (1-3), but only two regarding LP conduit (4-5). Here, we describe such a patient and discuss the literature.

Case report

A 41-year-old female patient was referred to the surgery department because of complaints of recurrent right upper quadrant abdominal pain irradiating to the scapular area. Following several such episodes, an abdominal ultrasound imaging was performed and disclosed multiple small stones within the gallbladder. The results of complete bloodcount and biochemical blood tests (including the levels of ASAT, ALAT, bilirubin and its fractions, total protein, albumins, alpha amylase, glucose, creatinine, urea, potassium, sodium, chloride, calcium, C-reactive protein) as well as coagulation parameters were within the reference intervals; therefore, a laparoscopic cholecystectomy was scheduled. The preceding medical history was remarkable for idiopathic intracranial hypertension, treated by LP shunt placement in the preceding year. Based on this information, abdominal radiographs were obtained and illustrated the LP shunt in the left flank with the tip of the catheter in the pelvis (Fig. 1). A neurosurgeon consulted the patient and approved the planned operation. A standard approach regarding port placement and pneumoperitoneum insufflation was used. The course of the operation was uneventful. No perioperative complications were encountered, and the patient was discharged shortly after procedure in an excellent overall condition.

Discussion

Gallstone disease is among the most common health problems in the 21st century, affecting 10-15% of adults in Western countries and, as the population ages, the prevalence is expected to rise. Consequently, laparoscopic cholecystectomy, the gold standard in the treatment of symptomatic gallstones, is the most frequently performed elective abdominal operation in the developed world (6). Nowadays, around 90% of elective and 70% of emergency cholecystectomies are performed laparoscopically, indicating general acceptance and considerable experience with this procedure. This is also reflected by low perioperative mortality (0.1-0.3%) and the infrequent occurrence of complications such as bile duct injury (0.1-0.3%), bile leak (0.1%), intra-abdominal abscess (0.1%) and peritonitis (0.2%), as reported by Duncan and Riall (7). However, mortality reaches 2.3% when patients older than 80



Figure 1. Pelvic radiograph showing lumboperitoneal shunt

years of age are operated on (8), illustrating at least partly the effect of co-morbidities on the outcome of laparoscopic cholecystectomy. One such comorbidity is obesity, which along with female gender, is a risk factor for gallstone disease and was present in this particular patient. Besides being a risk factor for the development of gallstones, obesity is shown to increase the risk of conversion to open procedure (7) and might complicate perioperative care due to association with other comorbid conditions like cardiovascular pathologies, non-alcoholic steato-hepatitis, chronic kidney disease, diabetes mellitus and cancer. Weight reduction should always be encouraged as it reduces the risk of development and mortality from the aforementioned disorders (9).

Our understanding of idiopathic intracranial hypertension (IID) is still growing. IID is a syndrome of increased intracranial pressure without any known cause. It manifests clinically as chronic and often debilitating headaches, papilledema with progressive visual impairment and reduced quality of life. Two main risk factors for IID are female gender and obesity. Thus, the incidence of IID in the general population is 1-2 per 100,000, whereas in young obese women, it can reach 19-21 per 100,000 (10).

Surgical options are considered following the failure of conservative therapy with weight reduction and acetazolamide. LP shunt was chosen in this particular patient, with other possible options being VP shunt, optic nerve sheath fenestration or dural venous sinus stenting in case of stenosis (10). As with any surgical procedure, there are certain risks associated with laparoscopic cholecystectomy in the presence of an LP shunt. Possible complications include shunt infection or obstruction, puncture of the catheter, subcutaneous emphysema, and conversion to open procedure due to adhesions from the previous operation (5). It is worth mentioning that these

complications and their rates are based on case series describing VP conduit.

The proposed risk of retrograde flow of CO₂ during laparoscopy is minimal, as shown by an *in vitro* study using various VP shunt systems and pressures up to 350 mmHg (11). It is suggested that increased intracranial pressure during the procedure owing to the pneumoperitoneum and stoppage of flow could be an important factor in procedures with an operating time of more than three hours (3), which is clearly not the case in a standard cholecystectomy.

Alterations in port placement to avoid damaging the catheter and using Hasson's technique have been described by Charalabopoulos et al., but no such modifications were made in this case. There are currently no publications describing single incision laparoscopic surgery (SILS) for patients with an LP shunt, but this modality could offer an alternative for alterations in port placement in the future, if the use of SILS becomes more widespread. Despite some technical difficulties, advantages offered by SILS make it a valuable option for the treatment of gallstone disease (12).

There is an interesting prospect of bariatric surgery as an option for the treatment of IID, since obesity is one of the major risk factors. The amount of evidence to support surgical weight reduction to improve symptoms and decrease intracranial pressure is growing. A recently published systematic review illustrated an overall reduction of IID symptoms in 92% of observed patients and just like a number of other publications, endorses such application of bariatric surgery. In addition, this could provide a viable option if standard conservative and surgical treatments fail (13).

Conclusion

Based on our experience and evidence in the literature, we conclude that performing a laparoscopy for a patient with an LP shunt is safe. This case clearly emphasises the importance of obtaining thorough past medical history. Despite some rare complications, current research does not indicate a need to clamp the catheter to prevent retrograde flow. Furthermore, modern LP shunts with programmable valves are available and will likely become more popular, given the fact that they have numerous advantages in safety and efficacy compared to conventional LP and VP shunts (14). In addition, the incidence and prevalence of obesity in Western countries is growing, which will likely increase the incidence of IID, the application of bariatric surgery for this indication and the population of general surgical patients with an LP shunt.

Conflict of interest

The authors declare no conflict of interest.

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