International Journal of Research in Medical Sciences
Gonzalez YZ et al. Int J Res Med Sci. 2024 Aug;12(8):3024-3026
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20242237

Case Report

Laparoscopic cholecystectomy in an adult patient with a ventriculoperitoneal shunt system

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Received: 07 June 2024
Accepted: 11 July 2024

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ABSTRACT

Adult patients with a ventriculoperitoneal shunt valve (VDVP) are not exempt from suffering from gastrointestinal diseases. Nowadays, with technological advances, it would be contradictory not to offer them the benefits of minimally invasive surgery. The case of a laparoscopic cholecystectomy of a 40-year-old male patient with VDVP who presented clinical signs of cholecystitis is presented. The patient's evolution was satisfactory and he was discharged home 72 hours after surgery. Currently, there are significant studies that demonstrate the benefit of minimally invasive surgery in patients with VDVP as a treatment for abdominal surgical pathologies, including biliary pathology. Therefore, in our experience and with the published cases, we conclude that patients with VDVP do benefit from minimally invasive surgery for any abdominal surgical pathology, including pathology of biliary origin.

Keywords: Gallbladder empyema, Laparoscopic cholecystectomy in adults, Ventriculoperitoneal shunt valve, Ventriculoperitoneal shunt system

INTRODUCTION

Adult patients with a ventriculoperitoneal shunt valve (VDVP) are not exempt from suffering from gastrointestinal diseases, which require surgical management. Advances in technology in terms of minimally invasive surgeries have shown to have better benefits and shorter recovery time. Lower metabolic response to trauma among other benefits, and in patients with VDVP it would be contradictory not to offer them the benefits of minimally invasive surgery.[1] However, there are complications that could be exacerbated in patients of this type, such as an increase in intracranial pressure (ICP) during the surgical intervention, due to the risk of CO2 diffusion through the VDVP, cerebral arteriolar vasodilation due to hypercapnia or engorgement of the cerebral veins due to increased pressure of the vena cava.[2,3]

CASE REPORT

A 40-year-old male patient with a history of hydrocephalus secondary to an unspecified tumor, had been carrying VDVP since he was 20 years old. Discharged by the neurosurgery service due to satisfactory evolution, without presenting again with hydrocephalus, with functional VDVP. In January 2024, he was admitted to the emergency department due to cholecystitis. USG was performed, which reported acute chronic lithiasic cholecystitis complicated by signs of pyocholecystitis, without dilation of the intra- and extrahepatic tract, thickened walls, bile sludge in the interior and stone embedded in the neck measuring 25x23 mm, hepatic gland and pancreas without abnormalities. (Figure 1). Laparoscopic cholecystectomy was performed urgently based on evidence in the literature and in response to prior consultation by neurosurgery. The laparoscopic cholecystectomy was performed with the

usual technique under balanced general anesthesia, with the placement of 4 ports, however we only worked with 3 since during the procedure under direct vision the tip of the intra-abdominal catheter was externalized through the third 5 mm port. (Figure 2 and 3) and it was stored in a sterile bag, verifying the functionality of the VDVP, insufflation pressures between 12 and 14 mmHg and a surgical time of 100 min were managed. At the end of the surgery, under direct vision, the catheter was introduced into the abdominal cavity, taking it to the pelvic cavity and before removing the camera we confirmed its adequate functionality.

Figure 1: Ultrasound of inflamed gallbladder with stone inside.

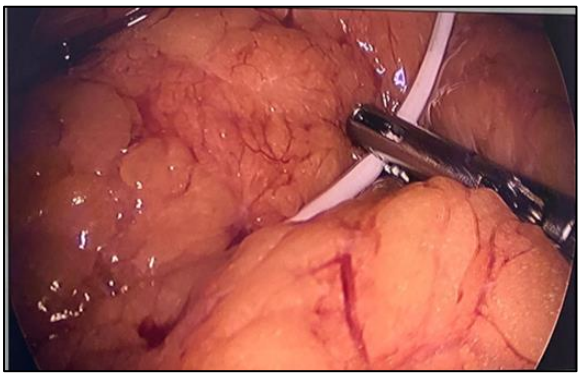

Figure 2: Catheter in peritoneal cavity.

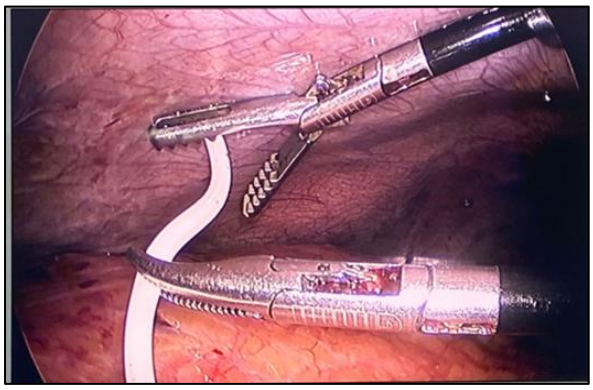

Figure 3: Catheter exteriorization

Figure 4: Gallbladder and 3 cm Stone.

During the procedure, an incident occurred; the gallbladder opened, releasing bile, mud and stones into the cavity, so the abdominal cavity was washed with physiological solution, aspirating the cavity and removing the stones. Partial fenestrated cholecystectomy was performed and a 3 cm stone was removed. (Figure 4). In the postoperative period, management was decided with a double intravenous antibiotic regimen with Meropenem and Metronidazole for 72 hours to prevent the risk of infection in the catheter. Postoperative course without complications and he was discharged home after 72 hours.

DISCUSSION

Laparoscopic surgery can increase ICP by different mechanisms, such as cerebral arteriolar vasodilation due to hypercapnia due to the risk of CO2 diffusion or engorgement of the cerebral veins due to increased pressure of the vena cava. Likewise, ICP can be increased by clamping the catheter or use pressures higher than 16 mmHg for more than 3 hours of surgery.[3] To reduce possible complications, different techniques have been proposed to perform a laparoscopic procedure in patients with VDVP. The first is to request an imaging study to corroborate the proper placement of the catheter. A simple abdominal x-ray is suggested to follow its path, clinically rule out signs of hydrocephalus and thus verify the proper functioning of the VDVP, maintain insufflation pressures of between 12 and 14 mmHg and always less than 16 mmHg, duration of the surgical procedure of less than 3 hours, avoid clamping the catheter, it is suggested to externalize it with sterile technique and store the tip in any sterile excipient, preferably where it can be seen that it is still functional , that is, it continues to drain cerebrospinal fluid (CSF), in this case we decided on this last option since it is a simple procedure, we reduce the risk of catheter breakage by avoiding clamping it and it is maintained at atmospheric pressures so it does not alter the fluid mechanics and It allows the CSF to continue draining, so the catheter can be reintroduced at the end of the surgery under direct vision.[4] The risk of neurological infection after catheter manipulation and intra-abdominal findings must be

avoided, so prophylaxis and therapeutic antibiotic therapy with cefotaxime are recommended more vancomycin.[5]

CONCLUSION

In conclusion, different bibliographies and according to our experience with this case, laparoscopic surgery is beneficial for patients with VDVP and can be carried out safely following standardized measures and thus reduce risks and complications.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Wilver E, Jesús P, Ismael L. Laparoscopic cholecystectomy in a patient with ventriculoperitoneal shunt system: Elsevier. 2014;71(5):303-6.
2. Fuentes S, Cano A, Garcia M, Benavent I, Lopez E, Portela E. Laparoscopic surgery in patients with valve ventriculoperitoneal shunt. Pediatric surgery. 2011;24:48-50.
3. Kimura T, Nakajima K, Wasa M, Yagi M, Kawahara H, Soh H et al. Successful laparoscopic fundoplication in children with ventriculoperitoneal shunts. Surg Endosc. 2002;16:215.
4. Collure DWD, Bumpers HL, Luchette FA, Weaver WL, Hoover EL. Laparoscopic cholecistectomy in patients with ventriculoperitoneal (VP) shunts. Surg Endosc. 1995;9:409-10.
5. Al-Mufarrej F, Nolan C, Sookhai S, Broe P. Laparoscopic pocedures in adults with ventriculoperitoneal shunts. Surg Laparosc Endosc Percutan Tech. 2005;15:28-9.

Cite this article as: González YG, Hernández RG. Laparoscopic cholecystectomy in an adult patient with a ventriculoperitoneal shunt system. Int J Res Med Sci 2024;12:3024-6.