

2024 대한심장혈관흉부외과학회 제56차 추계학술대회

2024. 10. 31 (Thu) - 11. 01 (Fri) 여수 엑스포 컨벤션센터



Laparoscopic management of ascitic fluid leak from the left ventricular assist device driveline exit site

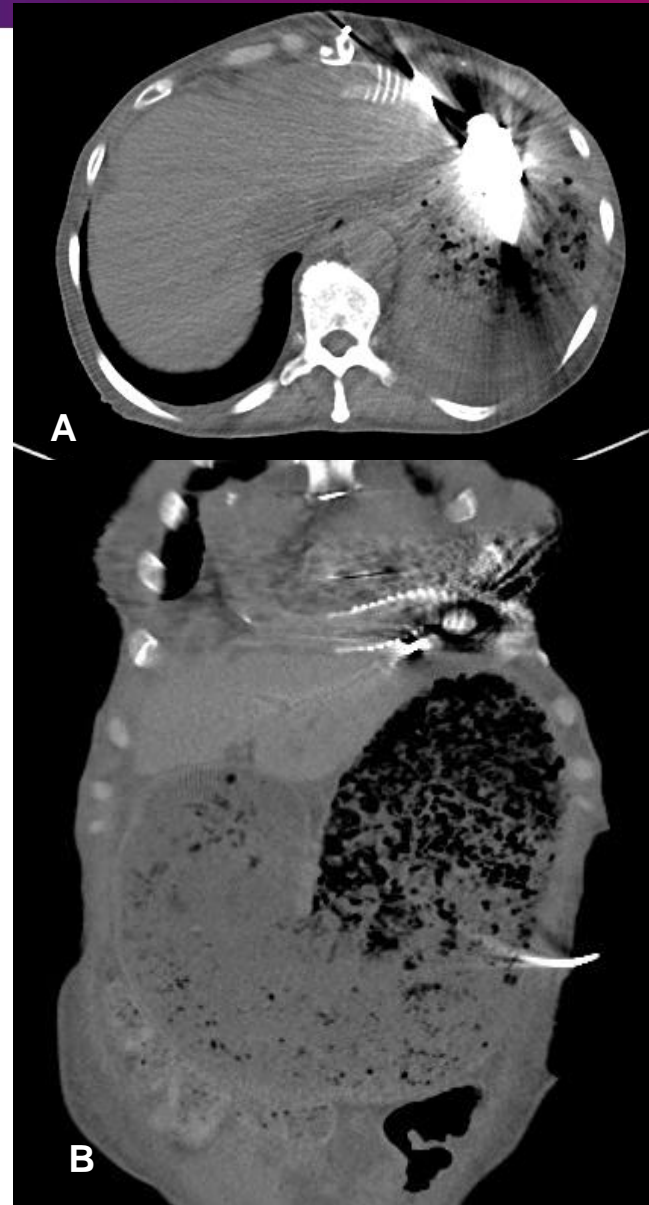
- Left ventricular assist devices (LVADs) have revolutionized the treatment of end-stage heart failure (HF).
- Current standard practice involves implanting the smaller pump directly into the left ventricle's (LV's) apex. Additionally, the driveline is tunneled subcutaneously.[1]
- The most frequent and critical complication associated with the driveline is infection.[2]
- Despite the lack of CT evidence, the strong suspicion of driveline transgression prompted a multidisciplinary decision to proceed with surgical exploration.
- We present a successful application of a minimally invasive laparoscopic approach to control ascites leakage around the driveline before it progressed to an infection.

- **73-year-old female, Chief complaint for ascites leakage**
- Acute decompensated heart failure (LV ejection fraction of 18.6%)
- Ischemic cardiomyopathy (3VD)
- History of percutaneous coronary intervention for myocardial infarction involving the left anterior descending and left circumflex arteries (LAD, LCX PCI 2014.01) (os-mRCA PCI, 2014)
- Severe AS (AVmax 4.0m/s), Moderate AR, Moderate TR
- s/p LVAD Implantation (Heartmate III) (2023)
- She had a prior medical history significant for liver cirrhosis with ascites.

LVAD implantation

2024 대한심장혈관흉부외과학회
제56차 추계학술대회

- OP Name
- : LVAD Implantation (Heartmate III)
- Bypass Time – 107 min
- ACC Time – 22 min
- Figure : (A,B) Computed tomography scan after LVAD implantation operation. (C) The appearance of a cachexic patient following left ventricular assist device implantation.

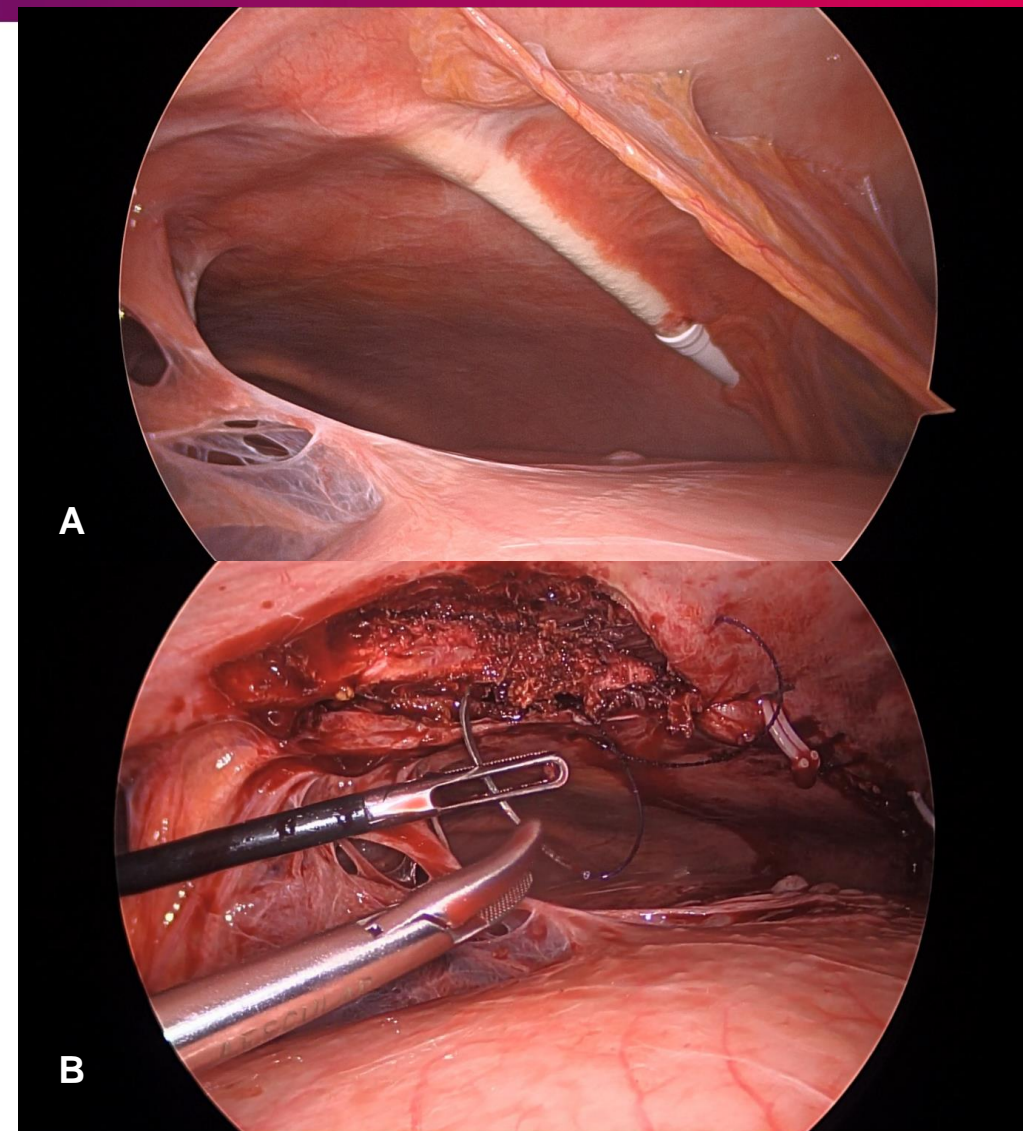


대한심장혈관흉부외과학회
The Korean Society for Thoracic & Cardiovascular Surgery

Laparoscopic Exploration

2024 대한심장혈관흉부외과학회
제56차 추계학술대회

- Laparoscopic examination revealed an exposed segment of the driveline, approximately 8 cm in length, extending from the midline to the left lateral abdominal wall.
- The abdominal wall was thin, with a fused posterior abdominal fascia and peritoneum.
- Utilizing three laparoscopic ports, the exposed driveline was repositioned between the transversus abdominis and internal oblique muscles, followed by primary repair of the extended peritoneum.
- A primary repair of the stretched peritoneum was performed elevating the driveline and placing it between the transversus abdominis and internal oblique muscles.
- Figure: (A,B) Laparoscopic view.



대한심장혈관흉부외과학회
The Korean Society for Thoracic & Cardiovascular Surgery

- Uncomplicated, leakage of ascites may not significantly increase infection risk.[3] Long-term leakage, however, requires intervention due to patient discomfort and extended hospitalization.[3]
- In our experience, most reported LVAD driveline complications involve infections managed with relatively invasive open procedures. [4, 5]
- This case highlights the importance of careful driveline placement during LVAD surgery in patients with significant ascites and cachexia. Misplacement of the driveline within the abdominal cavity can lead to infection, gastrointestinal issues, and extended hospital stays.
- We aimed to demonstrate the value of a multidisciplinary approach in addressing iatrogenic complications. Early intervention with appropriate treatment, as shown in this case, can effectively resolve these issues through minimally invasive laparoscopic surgery.

References

1. Schibilsky D, Benk C, Haller C, Berchtold-Herz M, Siepe M, Beyersdorf F, Schlensak C: Double tunnel technique for the LVAD driveline: improved management regarding driveline infections. J Artif Organs 2012, 15(1):44-48.
2. Sennhauser S, Sridharan L: Left Ventricular Assist Device Emergencies: Diagnosis and Management. Crit Care Clin 2024, 40(1):159-177.
3. De Gottardi A, Thevenot T, Spahr L, Morard I, Bresson-Hadni S, Torres F, Giostra E, Hadengue A: Risk of complications after abdominal paracentesis in cirrhotic patients: a prospective study. Clin Gastroenterol Hepatol 2009, 7(8):906-909.
4. Sajjadian A, Valerio IL, Acurturk O, Askari MA, Sacks J, Kormos RL, Manders EK: Omental transposition flap for salvage of ventricular assist devices. Plast Reconstr Surg 2006, 118(4):919-926.
5. Kilo J, Dumfarth J, Hofer D, Grimm M: Successful Treatment of Driveline Infection with Vacuum-Assisted Closure Therapy and Instillation Therapy. Thorac Cardiovasc Surg Rep 2020, 9(1):e29-e32.

