SV9: VENTRICULOPERITONEAL SHUNTS: LAPAROSCOPIC-ASSISTED APPROACH

Laura Righetti^{*1}, Susanna Milianti¹, Giovanni Boroni¹, Fabio Torri¹, Silvia Pecorelli¹, Claudio Cereda¹, and Daniele Alberti¹ E-mail: Laura Righetti — laurarighetti@alice.it

¹Department of Pediatric Surgery, Spedali Civili Hospital, Brescia, Italy

Background The surgical treatment of hypertensive hydrocephalus involves the shunt of the cerebrospinal fluid (CSF) in excess in another cavity, in order to alleviate the symptoms due to the increase of intracranial pressure. The catheter is most commonly placed in the peritoneal cavity, in the pleural cavity or in the right atrium of the heart. In the last decade, the laparoscopic-assisted technique has been utilized to facilitate the placement of the abdominal portion of the shunt.

Materials and methods From February 2011 to February 2017, a total of 45 patients (age range: 1mo and 13 yrs old; median age: 6mo old) were submitted to ventriculoperitoneal shunt (VPS) placement: 28 patients (62%) were treated with the laparoscopic-assisted technique (LVPS). A ventricular catheter is placed by the neurosurgeon through a small cranial incision and it is connected to a Codman Hakim Programmable Valve system. Then, using a tunneler, the VPS is brought subcutaneously from the insertion point to the right or left hypochondrium. A 3-mm skin incision is made exactly at the end of the subcutaneous tunnel. An umbilical 5-mm optical trocar along with a 3-mm trocar in the right/left flank used to introduce a grasper, are placed in younger patients, while a single 10-mm Hasson trocar is preferred in bigger patients. After the pneumoperitoneum is established, the catheter is inserted using a peel-away introducer and its distal tip is carried down into the pelvis.

Results There were no intraoperative complications and no laparoscopic assisted procedure had to be converted in open surgery.

Six patients (21%) required repeat VPS revision for malfunctioning of catheter valve.

At a mean follow-up time of 18 months (range: 1 to 57 months), one case of catheter infection and 1 case of shunt failure were assessed. Two patients died for progression of their malignant disease.

Conclusions Other studies showed that the LVPS does not cause a significant increase of intracranial pressure since the valve of the VPS prevents the transmission of the abdominal pressure cranially.

In patients treated with LVPS we assessed a low rate of catheter distal obstruction (4.8%).

Furthermore, the LVPS allows a safe placement of the abdominal portion of the VPS and it is important to assess (and eventually treat) the presence of peritoneal adhesions. Moreover, the VPS function can be confirmed under direct visualization.

In conclusion, the laparoscopic-assisted ventriculoperito-

neal shunt (LVPS) is a safe procedure that reduces the probability of catheter distal obstruction.

Key words Ventriculoperitoneal shunt (VPS), laparoscopic placement, catheter, obstruction