


# Failed ventriculoperitoneal shunt as treatment of infantile hydrocephalus

Serena Calgaro,<sup>1</sup> Anna Claudia Colangelo,<sup>2</sup> Serguei Otchirov,<sup>3</sup> Damiano Pizzol ,<sup>4</sup> Mario Antunes<sup>3</sup>

**To cite:** Calgaro S, Colangelo AC, Otchirov S, *et al.* Failed ventriculoperitoneal shunt as treatment of infantile hydrocephalus. *World Jnl Ped Surgery* 2020;3:e000123. doi:10.1136/wjps-2020-000123

Received 4 March 2020  
Revised 30 April 2020  
Accepted 3 May 2020

Hydrocephalus is a common and complex condition caused by physical or functional obstruction of cerebrospinal fluid flow that leads to progressive ventricular dilatation affecting 1.1 in 1000 infants.<sup>1</sup> From 2013 to 2017, at our hospital, there were 321 cases of hydrocephalus (178 male and 143 female) with a mean age of 18.5 months, who were treated by placing a ventriculoperitoneal shunt. In low-income settings, complications are common and, among our cases 42 (13%) had complications such as shunt dysfunction, leaking from the anus, oral cavity, scalp or abdominal wall, scalp infection, liquorrhea, and paralytic ileus. The reasons of these complications are lacking of well-trained professionals and inappropriate equipment. In our cases adult drainage equipment was used owing to the lack of pediatric ones.

We reported two failed outcomes of the application of ventriculoperitoneal shunt. In the first case, the shunt was performed when the baby was two months old. Due to the weakness of the health system, he was lost to follow-up. The parents came back only in the seventh month because the baby was irritable, crying, in pain and vomiting. He presented with the drainage coming out of his mouth (figure 1) after perforation of some viscera,



**Figure 1** Failed ventriculoperitoneal shunt with drainage coming out of the mouth.



**Figure 2** Failed ventriculoperitoneal shunt with drainage coming out of the umbilical scar and the relative X-ray.

likely the stomach. Although X-ray is the first step in order to drive the surgery in high-income and low-income settings, like in our hospital, it is not always possible to perform X-ray. In this case, we just removed the drainage and placed another one on the other side. In the second case, a 5-month-old baby arrived in critical condition with the drainage coming out of the umbilical scar (figure 2). In this case, it was possible to perform X-ray and then, as in the previous case, we removed the drainage and placed another one on the other side.

These cases highlight that, in low-resource settings, well-trained professionals and appropriate equipment are lacking, and an accurate diagnosis is not possible. It is mandatory to strengthen the healthcare system in order to improve the management of these diseases in deprived countries.

**Contributors** CS and CAC contributed to manuscript preparation; OS, PD and AM contributed to manuscript editing and review.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Parental/guardian consent obtained.



© Author(s) (or their employer(s)) 2020. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

<sup>1</sup>Department of Woman's and Child's Health, University of Padua, Padova, Veneto, Italy

<sup>2</sup>Department of Surgery and Organ Transplantation, University of Padua, Padova, Veneto, Italy

<sup>3</sup>Department of Surgery, Central Hospital of Beira, Beira, Mozambique

<sup>4</sup>Research Department, Cuamm Medici con l'Africa, Padova, Veneto, Italy

#### Correspondence to

Dr Damiano Pizzol;  
damianopizzol8@gmail.com



**Ethics approval** This study has been approved by the hospital ethics committee.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data sharing is not applicable as there are no data sets generated and/or analyzed for this study.

**Open access** This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is

properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

#### ORCID iD

Damiano Pizzol <http://orcid.org/0000-0003-4122-0774>

#### REFERENCE

- 1 Tully HM, Dobyns WB. Infantile hydrocephalus: a review of epidemiology, classification and causes. *Eur J Med Genet* 2014;57:359–68.