

## Cerebral Space Occupying Process (SOP) due to Suspect Rathke's Cleft Cyst and Craniopharyngioma with complication Hydrocephalus and VP Shunt Kocher S Malfunction – Case Report

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**Abstract:** Ventriculoperitoneal shunt (VPS) is the standard procedure for hydrocephalus. The author reports a case of a 35 year-old female patient with a history of brain tumor and a history of VP Shunt Kocher S surgery presenting with a complaint of decreased consciousness. Upon head CT scan, hydrocephalus was found with VP Shunt malfunction. She underwent an emergency External Ventricular Drain (EVD) Kocher S surgery. Laparotomy was also conducted to correct distal obstruction. During the surgery, it was found that the distal drain was covered by omentum. Complications of VPS generally are either mechanical or infectious. Mechanical obstruction can result from omentum covering the distal portion of the VPS drain.

**Key Word:** Intrathecal; Bupivacaine; Buprenorphine; Nalbuphine; Postoperative analgesia.

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### I. Introduction

Ventriculoperitoneal shunt (VPS) is the standard procedure for hydrocephalus. This technique was developed by Kausch in 1908. In this technique, the peritoneal cavity functions to absorb cerebrospinal fluid (CSF)<sup>1</sup>. Complications of VPS are generally divided into mechanical and infectious. Obstruction and migration of the proximal and distal ends are mechanical complications. Meanwhile, ventriculitis, VPS tract abscess, skin necrosis are examples of complications due to infection. These complications sometimes require surgical management during the patient's lifespan<sup>2</sup>. Complications were statistically less common in adults than in children. The reported complications in adults range from 17-33%<sup>1</sup>.

### II. Case Report

The patient was a 35 year-old female. She was taken to the hospital due to decreased consciousness. She arrived at 10.00 WIB on 21st July, 2020 with a complaint of decreased consciousness since 06.00 WIB earlier that day. She was previously diagnosed with a brain tumor in April 2020 and received Kocher S VPS surgery on 24th April, 2020. Based on MRI with contrast conducted on 19th May 2020 (Figure 1), she was diagnosed with a suspected Rathke's cleft cyst and Craniopharyngioma. On 7th July 2020, she underwent Kocher S VPS revision surgery. Upon vital sign examination, there was tachycardia and GCS 113. Physical examination of the head, neck, thorax, abdomen, and extremities were within normal limits. Upon neurological examination, GCS 113, pupil isocoric diameter 3mm / 3mm with normal light reflex, positive corneal reflex in both eyes, no meningeal sign, and no lateralization. Laboratory examination was within normal limits except for leucocytosis. Thorax radiograph within normal limits. CT scan of the head and abdomen can be seen in Figures 2 and 3. CT scan of the head shows hydrocephalus with VPS malfunction.

Figure 1: Head MRI 15<sup>th</sup> May 2020

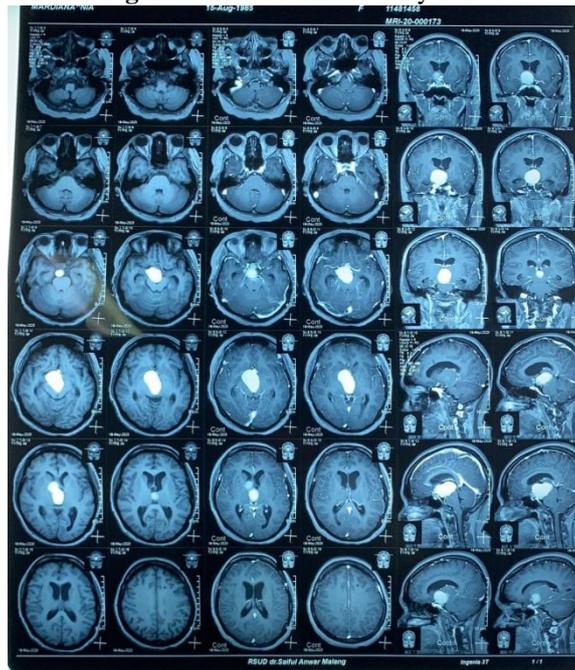
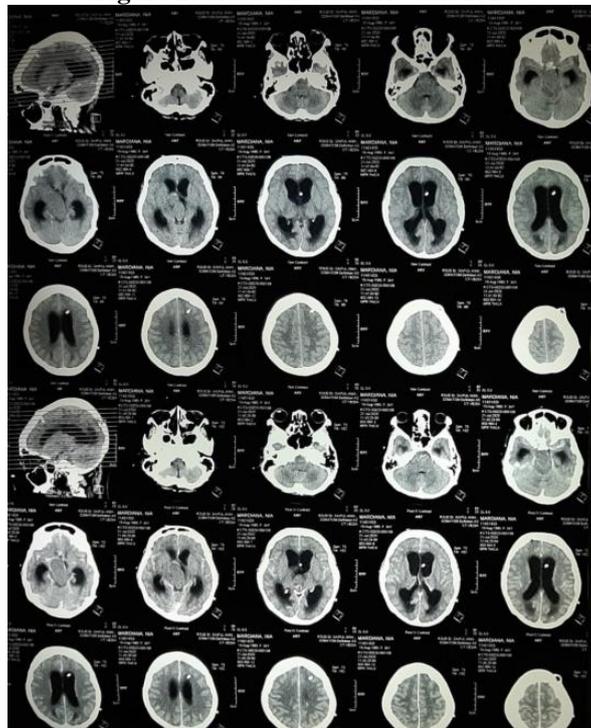


Figure 2: Head CT-Scan 21<sup>st</sup> Juli 2020



**Figure 3:** Abdominal CT-Scan 25<sup>th</sup> Juli 2020



On 21<sup>st</sup> July 2020, EVD Kocher D emergency surgery was conducted. On 27<sup>th</sup> July 2020, exploratory laparotomy was conducted and it was found that the distal VPS drain was covered by omentum (Figure 4). After the omentum was removed from the drain, the VPS was evaluated and it was patent (Figure 5).

**Figure 4:** VPS drain covered by omentum.



**Figure 5: Patent VPS Draining**



VPS functions as drainage of excess CSF. Excess CSF results from either duct obstruction or decreased CSF absorption. VPS is used as the management of hydrocephalus. CSF fluid can be drained to several regions such as the heart atrium (ventriculoatrial), pleural cavity (ventriculopleural) and peritoneal cavity (ventriculoperitoneal). VPS malfunction can cause fluid buildup and can lead to cerebral edema and herniation<sup>3</sup>.

VPS obstruction and infection is still a problem today which often results in the need for re-treatment, revision and replacement of VPS<sup>4</sup>. The incidence of VPS obstruction is reported to range from 5% - 47%. Obstruction can occur either proximal or distal to the duct. Proximal blockage may occur due to red blood cells, tumor cells, and the high protein concentration in CSF. The most common complications of VPS are abdominal involving obstruction of the VPS drain distal to omentum or the formation of connective tissue at the end of the VPS drain. In a reasearch by Pad Pradyumna, it was stated that obstruction in the distal portion of the VPS drain can be due to formation of tissue at the end of the drain and omentum covering the drain<sup>2,5,6</sup>. This is the same as in our patient where the distal part of the VPS channel was covered by omentum therefore causing obstruction.

Clinical symptoms of VPS obstruction include headache, lethargy, nausea and vomiting, while fever is more likely due to infection. VPS obstruction diagnosis can be obtained from head CT scan and lumbar puncture. When obstruction occurs, CT scan will show an increase in the size of the intracranial ventricles<sup>4</sup>. In our patient, there were symptoms of increased intracranial pressure in the form of decreased consciousness accompanied by ventricular dilation on CT scan. Laparotomy is still the treatment for VPS patients with abdominal complications due to pseudocysts, intestinal obstruction, and other obstructions<sup>4,5</sup>.

### III. Conclusion

VPS complications generally are either mechanical or infectious. Mechanical obstruction can result from omentum covering the distal portion of the VPS drain.

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