



Case #113

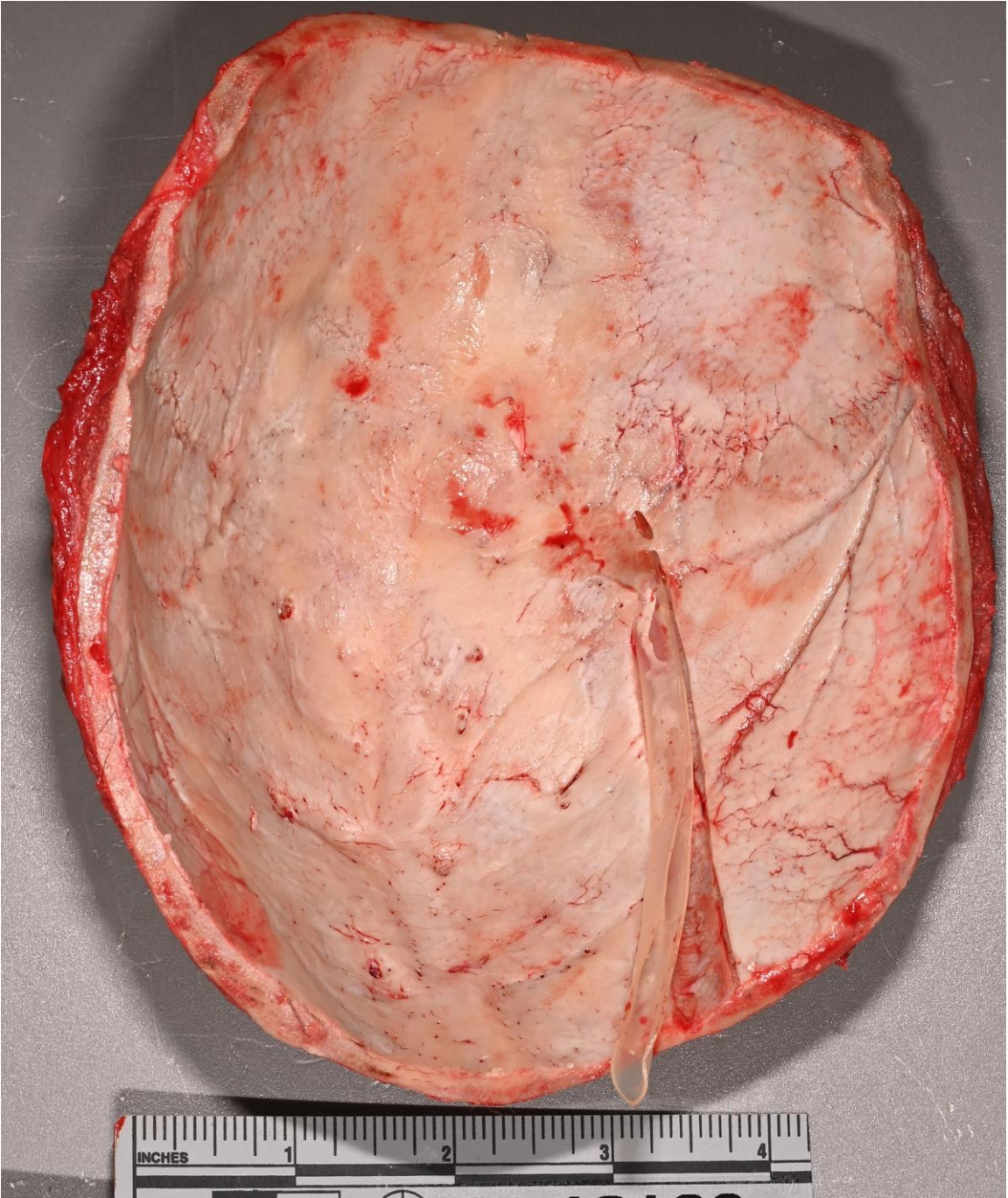
NAME Educational Activities Committee

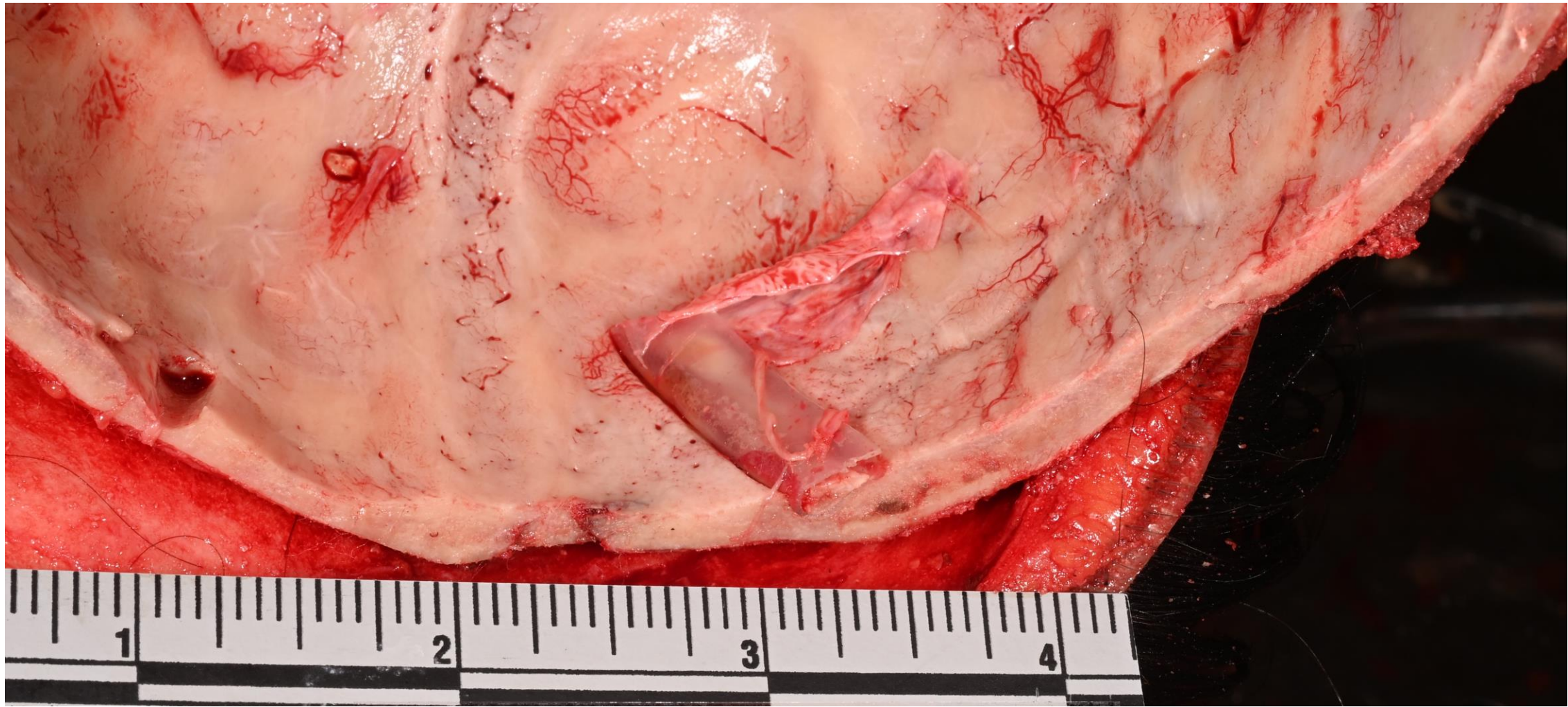
Case provided by:

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1. This 36-year-old man was found unresponsive on the living room floor. He was obese and had a history of substance use. The two autopsy images show an incidental finding. Per his mother, he had some type of neurosurgery at the age of 4 months. What was the reason for the surgery?

- Bilateral epidural hematoma
- Skull abnormality
- Hydrocephalus
- Bacterial Meningitis





Answer...

B. Skull abnormality (CORRECT ANSWER, 7.76% of responses)

This is a remote surgical therapy for craniosynostosis.

The synthetic material shown in this picture represents silastic strips (Maugans, 1997). These are U-shaped synthetic channels placed around cut edges of the bone during the correction of craniosynostosis (Maugans, 1997). Image 3 with the arrow shows a tunnel which contained a second strip. Virchow's law describes skull deformities in craniosynostosis due to the cessation of growth across a prematurely fused suture with compensatory growth along non-fused sutures in a direction parallel to the affected suture, causing obstruction of normal brain growth (Mehta, 2010). The surgical correction of craniosynostosis usually involves the removal of 2-4 cm of bone encompassing the prematurely fused suture. The surgical treatment includes variations of strip craniectomy (SC), occipital reduction-biparietal widening calvarial vault remodeling (CVR), and nowadays, variations of these surgeries with an endoscopic approach (Marupudi, 2022). Historically, the interposition of synthetic materials in the cut edges of the bones, as seen in the picture, was believed to prevent sutural restenosis, and was mostly used in surgical corrections during the 1980 and 1990's. (Maugans, 1997).



Other Answers...

A. Bilateral epidural hematoma (2.35% of responses)

There was no acute or remote evidence of epidural hemorrhage. As epidural hematomas are usually the result of an impact resulting in a temporal bone fracture and injury of the middle meningeal artery, they are usually unilateral.

C. Hydrocephalus (86.64% of responses)

Hydrocephalus occurs when increased cerebrospinal fluid accumulates within the cerebral ventricles and/or subarachnoid spaces, resulting in ventricular dilation and usually increased intracranial pressure (ICP). In cases managed with shunt procedures, a single catheter is placed into the lateral ventricle that drains the excess spinal fluid to the peritoneal cavity. No extracranial catheter was identified in this case, and the ventricles were not dilated.

D. Bacterial meningitis (3.25% of responses)

The examination did not show evidence of purulent exudate of the leptomeninges. Remote bacterial meningitis may show fibrosis of the meninges which was not found here. Bacterial meningitis is treated with antibiotics, not cranial catheters.

REFERENCES

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2. Maugans, T. A., McComb, J. G., & Levy, M. L. (1997). Surgical Management of Sagittal Synostosis: A comparative Analysis of Strip Craniectomy and Calvarial Vault Remodeling. *Pediatric Neurosurgery*, 137-148.
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