ADHESIVE SEALANT BIOMATERIALS

Clinical Series

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Use of TissuePatchDural™ for closure of a midline spinal durotomy following removal of an intradural schwannoma

Pre-operative status

A 56 year old teaching assistant with no past medical history of note, presented with a short history of low back pain radiating into the back of his left leg and calf. He had no neurological deficit on examination. An MR of his lumbar spine had shown a lesion almost filling the central canal at L3-4, most consistent with a nerve sheath tumour. Due to gradual worsening of his pain which was becoming refractory to all analgesia, we elected to proceed with surgical removal.

Figure 1: Pre-operative T1-weighted post contrast MRI scan showing peripherally enhancing intradural lesion

Figure 2: Pre-operative T2-weighted MRI scan showing partly cystic nature of tumour

Surgical procedure

The patient was positioned prone in the knee-chest position. A midline incision from L3 to L4 was carried out with exposure of the laminae and spinous processes. An L3 and L4 laminectomy was then performed, and the tumour position confirmed prior to the durotomy with intraoperative ultrasound. A midline durotomy then exposed the tumour arising from a rootlet of a nerve root within the cauda equina. The rootlet of origin could not be separated from the tumour and required to be sacrificed to allow en bloc resection of the tumour. The remaining rootlets of the parent nerve root were preserved. The midline durotomy was then repaired with a continuous 6/0 Ethilon® suture.

Treatment with TissuePatchDural™

A 50 x 25 mm TissuePatchDural™ was cut to shape and was applied per instructions for use. The surgical site was made as dry as possible through meticulous haemostasis, and any CSF leak through the repaired durotomy was minimised by tilting the patient head-down. The patch covered the exposed dura and extended to the bone edges of the laminectomy, and was able to conform easily to this surface area. Following placement, the TissuePatchDural™ film provided an effective seal over the suture line.

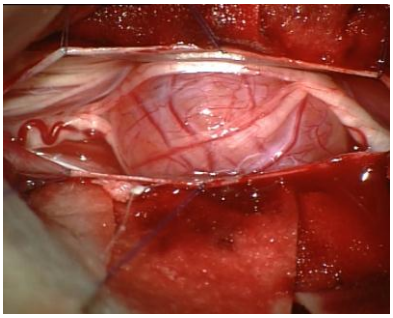

Figure 3: Durotomy exposing tumour

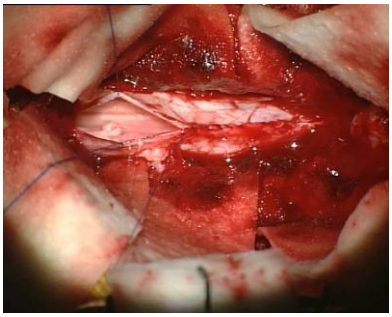

Figure 4: Suture of durotomy

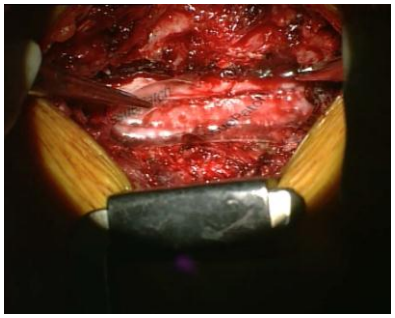

Figure 5: TissuePatchDural™ placed over sutured durotomy

Postoperative course

The patient recovered promptly following surgery. He had no new neurological deficit in his lower limbs as a result of the procedure. Due to the watertight nature of the dural closure, he was mobilised immediately post-operatively. He was discharged home on the 2nd post-operative day. His wound remained dry, and healed well with no evidence of a CSF leak or pseudomeningocoele.

Summary

The use of the TissuePatchDural™ gave an excellent dural seal, and provided a very good adjunct to the suturing of the midline spinal durotomy. The watertight CSF closure achieved allowed rapid mobilisation of the patient and an early discharge.

Surgeon opinion of TissuePatchDural™

This surgical scenario provides an ideal opportunity for use of TissuePatchDural™. The surface area of exposed dura in a midline spinal durotomy is ample for the sealant film to conform and adhere to the dura. It provided a watertight dural closure intra-operatively, and following its use, it facilitated a rapid and uneventful patient recovery.