“Countersinking” of reservoir in an irradiated patients can decrease tension on scalp closure

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Received: 04 March 15   Accepted: 07 May 15  Published: 23 July 15

INTRODUCTION

Subcutaneous reservoirs such as ommaya reservoir are used to administer intraventricular antibiotics for chronic meningitis, intrathecal chemotherapy for central nervous system lymphoma, and aspirate fluids from cystic tumors.¹²⁻⁵,¹⁰⁻¹³,¹⁴ However, their use is associated with complications such as hemorrhage, malfunction, and malpositioning. In an irradiated field with thin skin, use of reservoir can result in wound dehiscence, wound infection, and device extrusion.

We propose a “countersinking” technique of reservoir placement which creates a tailored bony recess to accommodate the reservoir [Figure 1].

CASE REPORT

The patient was a 46-year-old woman who underwent right frontal craniotomy in 1998 for tumor resection. Pathology was consistent with astrocytoma requiring adjuvant chemoradiation therapy. Her follow-up
Placement of a reservoir in an intracranial cavity can have far reaching consequences. Any technical modification to the CSF and intracranial cavity resulting in serious dehiscence, a superficial wound infection can easily track wound dehiscence and device extrusion. With wound irradiated wound with thin skin increases the risk of being life threatening. and infectious complications leading to meningitis can be life threatening. However, technical complications in the form of malpositioning and infectious complications leading to meningitis can be life threatening. Placement of a reservoir in an irradiated wound with thin skin increases the risk of wound dehiscence and device extrusion. With wound dehiscence, a superficial wound infection can easily track to the CSF and intracranial cavity resulting in serious intracranial complications. Any technical modification toward preventing such potential complications would have far reaching consequences.

CONCLUSION

Subcutaneous reservoirs provide an effective way of establishing external access to cerebrospinal fluid (CSF) and other intracranial fluid spaces. However, technical complications in the form of malpositioning and infectious complications leading to meningitis can be life threatening. Placement of a reservoir in an irradiated wound with thin skin increases the risk of wound dehiscence and device extrusion. With wound dehiscence, a superficial wound infection can easily track to the CSF and intracranial cavity resulting in serious intracranial complications. Any technical modification toward preventing such potential complications would have far reaching consequences.

In our patient, there was a high risk of wound dehiscence and reservoir extrusion given the thin irradiated skin. Countersinking of the reservoir into the bone decreases the protrubance and by doing so, minimizes the stretching of the overlying skin [Figure 2]. This simple modification decreases the risk of wound dehiscence and device extrusion. It also results in effective “soft tissue lengthening” and allows a tension free closure. We used an oblique trajectory, facilitated by neuronavigation and a tracked stylet for catheter placement, to ensure that the incision is outside the boundaries of previous radiation and the reservoir is not directly underneath the incision.

Since a large number of brain tumor patients require chemoradiation and these patients often have significant other co-morbidities resulting in poor wound healing, the “countersinking” of the reservoir can potentially prevent the risk wound dehiscence and device extrusion in these patients and enable tension free intra-operative closure of the wound.

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