Dilution versus pollution

To The Editor: We were pleased to learn of the study by Hayashi et al. (Hayashi T, Shirane R, Yokosawa M, et al: Efficacy of intraoperative irrigation with saline for preventing shunt infection. Clinical article. J Neurosurg Pediatr 6:273–276, September 2010) describing the efficacy of intraoperative irrigation with saline for preventing shunt infection. This work confirms and expands on the authors’ previous study1 on the success of antibiotic containing irrigation solutions in reducing shunt infection. Given the variability of current practices1 with respect to shunt technology and decision making, Hayashi et al. provide evidence to ground the approach to shunting in basic shunt technology and decision making. Hayashi et al. propose “the solution to pollution is dilution.” This link was captured by the pen of Peter Carter in his treatise on hand surgery2 and brought to our attention by Dr. Robert Presley, an Australian general surgeon. Hayashi and colleagues provide us with evidence that the solutions to pollution must include dilution. (http://thejns.org/doi/abs/10.3171/2010.11.PEDS10429)

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Disclosure

The authors report no conflict of interest.

References


Response: We greatly appreciate Drs. Cochrane and Anderson for their valuable and meaningful comments on our article. Their words, “the solutions to pollution must include dilution,” explained the concept of our irrigation strategy for preventing shunt infection. We greatly appreciate them.

Infection begins when bacteria successfully colonize by entering the body and proliferating. Not only the bacteria that cause the infection, but also the surrounding conditions that suit bacterial proliferation are needed for infection. Shunt surgery includes the risk of infection because it needs foreign materials to be set under the skin. But the setting of foreign material itself is not the only cause of infection. The injury of skin and subcutaneous tissue, which induces bacteria to easily invade, and CSF, blood, and exudates collection, which is considered to be an excellent growth medium for bacteria and is caused by surgical procedures, provide the chance for bacteria to settle and proliferate. Viable prevention strategies will disrupt the infection process. Saline irrigation can reduce contamination by washing out bacteria that come into contact with the surgical wound and the shunt material during any process of the operation; it also washes out CSF, blood clots, and exudates caused by surgical procedures.1–3

Furthermore, we had the experience of treating shunt tube infection by irrigating an opened wound with saline liquid. Even an infected wound can be cured by irrigation. Why not effect prevention? We think that if the general condition is good and the immune system is functioning, then the patient can frequently fight off the minimal number of causative bacteria before they begin proliferating and will not suffer shunt infection.

We should listen to the lessons told by the great predecessors as well as the nameless residents.

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Calvarial autograft

To The Editor: I read this paper with interest (Bauman JA, Hardesty DA, Heuer GG, et al: Use of occipital bone graft in pediatric posterior cervical fusion: an alternative paramedian technique and review of the literature. Technical note. J Neurosurg Pediatr 7:475–481, May 2011). The authors reported on the use of occipital bone graft in combination with occipitocervical fusion.1 They mention that such grafts have never been used in association with occipitocervical fixation.

In 1995 we described a full-thickness occipital bone graft adjoining the region of the foramen magnum.2,3 The occipital bone flap was reversed, denuded of pericranium, and roughened with the help of a drill. The upper end of the reversed bone flap was sutured to the bone defect. “Reversed foramen magnotomy,” as described, uses the curvature of the occipital bone to provide adequate and safe decompression of the craniovertebral region while preserving the bone in the midline. The superior edge of the magnotomy bone flap is a tight fit and can be sutured in place, while the rest of the flap swings away from the neural structures with little danger of recurrent compression by the bone flap. Such an expansive foramen magnotomy procedure can be performed in the case of Chiari malformation associated with craniovertebral instability. Occipitocervical fixation, foramen magnum bone decompression, and provision for bone fusion are simultaneously done by using the technique.

The authors should have reviewed the literature appropriately. (http://thejns.org/doi/abs/10.3171/2011.10.PEDS11189)

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Disclosure

The author reports no conflict of interest.

References


Response: We thank Dr. Goel for his interest in our paper describing our experience with calvarial autograft using rigid rod/screw fixation in a pediatric population and for taking the time to write a letter to the editor. Clearly, the technique of calvarial autograft harvest is not a new concept, as evidenced by the references listed in our paper, several of which pre-dated and were conspicuously omitted from Dr. Goel’s publication.1,4–6 However, our technique is a novel evolution of previous methodolo-

gies and consists of a midline keel-sparing suboccipital craniectomy for autologous bone graft to achieve solid fusion, and thereby obviating the need for an iliac crest graft while allowing screws to be placed into the keel. Our current series is an extension and further validation of our earlier work on the treatment of pediatric atlantoaxial instability with both traditional and modified Goel–Harms fusion constructs.

Dr. Goel’s technique removes the bony foramen magnum, preventing the placement of midline screws, and requires harvesting iliac crest bone for fusion.7 Keel preservation and a lack of iliac crest bone are the advantages of our technique. Further, Goel and Achawal5 state in their results that postoperative tomography was performed, but only lateral plain radiographs are shown, making it impossible for us to truly determine if the foramen magnotomy graft was ever incorporated into the fusion. Ostensibly, it was the iliac crest bone that was responsible for the fusion, rendering the foramen magnum bone superfluous. For those reasons we did not believe that Dr. Goel’s paper should be referenced in our own. The Journal of Neurosurgery has a rigorous peer review process and excellent editorial staff, none of whom recommended referencing Dr. Goel’s paper either.

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Helmets and synostosis