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Child's Nervous System

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Reply to the letter to the editor from Lo WB, Afshari FT, Rodrigues D and Kulkarni AV
regarding the article "Opening and closure of intraventricular neuroendoscopic
procedures in infants under 1 year of age: institutional technique, case series and
review of the literature"

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8 Keywords

9 hydrocephalus; endoscopic third ventriculostomy; CSF leak

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22 Declarations

23 **Funding** – none to declare

24 **Conflicts of interest/Competing interests** – none to declare

25 **Ethics approval** – not required; all data and images anonymised

26 **Consent to participate** – not required; all data and images anonymised

27 **Consent for publication** – not required; all data and images anonymised

28 **Availability of data and material** – all patient data anonymised; all references

29 supplied

30 **Code availability** – none to declare

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Main text

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3 Re: Lo WB, Afshari FT, Rodrigues D, Kulkarni AV (2020) Letter to the Editor Re: Cearns
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5 MD, Kommer M, Amato-Watkins A, Campbell E, Beez T, O’Kane R (2020) Opening and
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7 closure of intraventricular neuroendoscopic procedures in infants under 1 year of age:
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9 institutional technique, case series and review of the literature [1].
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15 We welcome the comments from Lo and colleagues on our institutional technique for
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17 opening and closure of intraventricular neuroendoscopic procedures in infants, and
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19 we read their technique with interest. It is clear that similar technical principles are
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21 utilized across our institutions to minimize cerebrospinal fluid (CSF) leak, including
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23 multilayered closure methods which both exploit and reinforce natural anatomical
24
25 barriers to possible CSF leakage. We were also pleased to report the success of our
26
27 technique in relation to clinical outcomes in 28 patients, with 0% CSF leak and
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29 complication rates in relation to this component of the procedure [2].
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38 The fundamental step that differs between these techniques is the closure of the
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40 cortical-ventricular tract created for endoscopic access, with one technique using
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42 TISSEEL (Baxter®) fibrin sealant to seal the tract, and the other plugging the tract with
43
44 a gelatin sponge ‘mushroom’ [3]. In our series, we have found that the partial deflation
45
46 of the brain generated by the endoscopic procedure allows the brain to be
47
48 manipulated to produce apposition of the two opposing cortical surfaces of the tract.
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51 This manipulation is facilitated by the use of a longer incision than is considered
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53 standard for such procedures. Considerable care is taken to ensure the TISSEEL
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55 (Baxter®) fibrin sealant only adheres to the more superficial component of the tract,
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1 and we have not encountered any instances of TISSEEL entering the ventricular cavity
2 in this series.
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7 When TISSEEL is utilized as per our institutional technique, we believe that over time
8 the tract becomes entirely sealed. Figure 1 demonstrates our use of TISSEEL to close
9 a cortical-ventricular tract following an open transcortical approach to the lateral
10 ventricle. This patient went on to require revisional surgery by the same approach 4
11 years and 8 months later, at which time the cortical divot was the only remaining
12 evidence of the original tract (Fig. 1c).
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25 It would be interesting to see the long-term effect on the cortical-ventricular tract of
26 implanting a biodegradable gelatin sponge between the cortical surfaces and we
27 would be interested to follow the results of the authors' institutional technique,
28 should they be published in due course.
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Figure captions

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41 **Figure 1:** Effect of TISSEEL fibrin sealant (Baxter®) on a cortical-ventricular tract
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43 following an open transcortical approach to the lateral ventricle (A, anterior; P,
44
45 posterior). **a** Application of TISSEEL to appose corticotomy edges and seal tract; blue
46
47 box indicates operative area of cortex shown at different time points in b and c. **b**
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49 Operative area of cortex prior to application of TISSEEL; yellow circle indicates cortical-
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51 ventricular tract. **c** Operative area of cortex during revisional surgery 4 years and 8
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53 months later; yellow circle indicates cortical divot where previous tract to the ventricle
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55 has sealed.
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