A retrospective evaluation of fistula formation in children undergoing hypospadias repair and caudal anesthesia

Sir—One of the recently discussed controversies in pediatric anesthesia is whether or not to abandon caudal anesthesia in patients undergoing hypospadias correction. Zaidi et al. (1) published the results of their retrospective trial including 135 patients of 1649 hypospadias repairs which did not show an association between caudal anesthesia and an increase in postsurgical fistulas, but Kundra et al. and Routh et al. found the opposite (2,3). To follow this question, we conducted a post hoc analysis of the incidence of urethrocutaneous fistula with and without caudal anesthesia in a cohort of children from our study of acute and chronic pain after hypospadias surgery at the University of Leipzig, Germany.

We administer caudal anesthesia for postoperative analgesia for hypospadias repair. Therefore, we reviewed 102 pediatric patients undergoing hypospadias surgery at our hospital between 2007 and 2012. Patients receiving caudal anesthesia were compared to patients who did not (control group). We analyzed the documented surgical follow-up appointments and asked the patients’ parents among others for information about long-term surgical complications. The posted questionnaires were adapted to the German pain questionnaire. IBM SPSS Statistics 21 was used for group comparison. The local ethics committee approved this study in 2013.

Results

Seventy patients were included. Reasons for exclusion were invalid contact information (n = 10), no valid consent (n = 15), and no available follow-up data (n = 7). Thirty-three patients received caudal anesthesia for postoperative pain management; 37 (control group)
patients received no regional anesthesia of which one received a penile block. In average, patients receiving caudal anesthesia were younger (Caudal: 3.08 (SD: 1.24) years; Control 4.29 (SD: 2.87) years. Both groups were similar in height, bodyweight, ASA classification, length of surgery, length of in-hospital stay, and performing surgeon. In eight patients (Caudal 4, Control 4), postsurgical complications were documented of which five were specified as fistulas (Caudal: 3; Control 2). There was no evidence for a difference in postsurgical fistulas between both groups ($P = 0.740$). The median length of surgery in patients with documented fistulas was not longer (1:43 h; IQR: 1:03 h) compared to the control group (1:59 h; IQR: 0:48 h), ($U$-test, $P = 0.642$). Besides fistulas, one retention cyst, one meatal stenosis, and a hole in the foreskin were mentioned. The mean follow-up range for patients without documented complications was 1.73 years (SD: 1.33; min: 0.03; max: 4.62).

To gain more information on long-term complications, 66 questionnaires were included in an additional analysis (Caudal $n = 32$, Control $n = 34$). Mean follow-up range was 3.28 years (SD: 1.56; 2 missing values). Four parents notified us of urethrocutaneous fistulas of which all had a congruent record in our hospital software system.

Concerning the association of fistulas and caudal anesthesia, our results are in agreement with the ones found by Zaidi et al.: In their study roughly 70% of both groups (fistula vs nonfistula) received caudal anesthesia which was not associated with the occurrence of fistulas. In comparison, our data did not show a longer duration of surgery in patients with a record of fistulas and was not biased by surgeon variability as the same surgeon performed all corrections (1). Nevertheless, we did not analyze the performed technique and hypospadias localization, which is known to be an independent risk factor for the development of fistulas (4). At our center, caudal anesthesia is usually administered at the end of hypospadias surgery. This might be an important difference to the study of Kundra et al. who administered caudal anesthesia perioperatively and favored an association of caudal anesthesia and fistulas (2). Unfortunately, Zaidi et al. did not specify this factor. Limitations of our study are the small case number, the retrospective design with originally a different hypothesis, and the inconsistent follow-up time range. Nevertheless, this study confirms the findings of Zaidi et al. strengthening arguments against possible negative consequences of caudal anesthesia used in hypospadias repair (1). The question remains if perioperative caudal anesthesia has a different effect on fistula formation compared to postsurgical performance.

**Ethics Approval**

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**Conflict of Interest**

The authors do not have any conflict of interest.

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