

Conclusion: Penile block provided better analgesia when compared with caudal epidural in children undergoing primary hypospadias repair. Postoperative urethral fistula formation was more likely in children who received caudal epidural.

Editorial Comment

This is a prospective randomized controlled trial comparing penile block with a caudal block for children undergoing hypospadias repair. They had 27 children in each group. Their patient population was older than most contemporary series with ages ranging from 4-12 years. Penile measurements were taken before and 10 minutes after the block in both groups. Breakthrough fentanyl was given for patients with increase in mean arterial pressure (MAP) or heart rate greater than 15% from baseline. Visual analogue scores were measured at various intervals over the course of 4 days. The authors found that pain scores were significantly worse in the group receiving the caudal block. In addition, changes in MAP and heart rate were significantly higher in the caudal group. This resulted in increased use of narcotics for the caudal block group. Five patients developed urethrocutaneous fistula. All of these patients were in the caudal group. The authors speculated that this may be due to the increase in penile volume that was seen in the caudal group but not observed in the penile block group.

Both penile and caudal blocks are used routinely for hypospadias repair. There is very limited data comparing the two in a prospective fashion as these authors have done. The decision of which type of regional anesthesia to perform is often based on the preference of the surgeon or anesthesiologist involved and over time a particular type of block simply becomes part of the culture of each individual institution. The authors only included patients with midshaft to distal hypospadias. Their fistula rate of nearly 20% seems high for a primary repair in such patients. It is interesting that all of these fistulas occurred in the caudal group. More prospective studies with greater numbers of patients would be helpful to improve our care for a common procedure.

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Effects of botulinum toxin type a in the bladder wall of children with neurogenic bladder dysfunction: a comparison of histological features before and after injections

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Purpose: Botulinum toxin type A has gained popularity in urology. Most reported studies have been in adults at urology centers and most have addressed long-term safety. Since botulinum toxin type A treatment for neurogenic bladder dysfunction requires repeat injections, verifying that such treatment does not induce fibrosis in children seems essential.

Materials and Methods: The study was approved by the institutional review board and patients were enrolled after we obtained written consent. Patients with neurogenic bladder dysfunction not responding to conventional treatment (anticholinergics and clean intermittent catheterization) were treated with 10 IU/kg botulinum toxin type A up to a maximum of 300 IU. Endoscopic cold cup biopsies were obtained from the posterolateral bladder wall 1.5 to 2 cm above the ureteral orifice. Bladder wall findings were categorized into 3 groups, including inflammatory infiltration, edema and fibrosis. Each criterion was then graded as mild or severe and analyzed by Fisher's exact test ($p < 0.05$).

Results: A total of 46 bladder wall biopsies were obtained from 40 patients 2 to 18 years old. Biopsies were evaluated in groups 1 and 2, including group 1-20 from patients with no botulinum toxin type A injection and group 2-20 after botulinum toxin type A injection. Group 2 was subdivided into group 3-10 biopsies after 1 injection and group 4-10 after multiple injections. Six patients underwent biopsy twice, that is before the first and second treatments. Histological changes were present in all biopsies. When comparing groups 1 and 2, there was no statistically significant difference in inflammation and edema. However, there was a significant difference in fibrosis between groups 1 and 4 ($p < 0.05$) with apparently decreased fibrosis after multiple injections.

Conclusions: In our experience repeat botulinum toxin type A injections into the detrusor in children do not lead to increased fibrosis in the bladder wall. This study confirms the long-term safety of botulinum toxin type A in the pediatric population.

Editorial Comment

The use of Botox to manage neurogenic bladder dysfunction in the pediatric population has gained ground in recent years as a minimally invasive alternative to bladder augmentation. Much of our information about the use of Botox comes from studies in adult populations whose bladder pathology often differs from the congenital conditions seen in the pediatric population. Concerns have been raised about the long-term use of Botox and the possibility of inducing fibrosis due to repeated injections. The authors in this study performed biopsies in pediatric patients with neurogenic bladder dysfunction both before and after Botox injections. They excluded patients with prior bladder surgery, vesicoureteral reflux, or those with a symptomatic urinary tract infection in the three months prior to biopsy. They biopsied 40 patients total. 20 of these were biopsied prior to a Botox injection and 20 at the time of repeat injection, 10-14 months later. In the second group half of them were biopsied after having received multiple injections (up to 4). Follow-up was performed at three-month intervals following treatment.

In biopsies performed prior to any injection of Botox, the authors found that patients already had evidence of edema and inflammation as well as some baseline fibrosis. This was typically mild in nature. There were no statistically significant changes noted in the biopsies after injection of Botox. They did note that in the patients who were biopsied after multiple injections there did seem to be a decrease in the severity of fibrosis.

This is a small study with short-term follow-up, but it is certainly encouraging for those seeking an alternative to augmentation cystoplasty, at least in the short term. Questions still remain regarding long-term efficacy and side effects, particularly in the pediatric population. Further studies like this with longer follow-up and a greater number of patients will be valuable in clinical decision-making and counseling of patients and families.

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