

UTILITY OF ULTRASOUND IN NEEDLE PLACEMENT FOR CAUDAL BLOCKS IN CHILDREN

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Background

Although single shot caudals are the most commonly used regional technique in pediatric anaesthesia, there is a lack of data regarding success rate of correct needle placement. However, more studies are necessary to look at accuracy of needle placement during routine practice and graded the available ultrasound view in relation to final block efficacy.

Methods

After review by the institutional IRB, one investigator with experience in ultrasound (US) for regional anesthesia (more than 100 US guided blocks) performed US examinations during the primary anesthesia teams procedure and collected the data. No alteration in treatment was made based on the exam. The data points collected included age of patient, weight, volume of injectate, type of needle and size used, number of needle passes, palpable sacral hiatus, ultrasound grade of view in three positions (scale 1-3), whether the needle could be visualized on ultrasound and efficacy of block by intraoperative vital signs and by recovery room nurses evaluations (VAS 0-10).

Results

We studied 53 caudal block placements with ultrasound. Patients ranged in age from 1 – 72 months and were undergoing lower abdominal surgery.

The needle was directly visualized in the caudal space in 45/53 blocks. Of the 45 where the needle could be seen, the injectate could be clearly visualized to increase the caudal space and all blocks were successful by intraoperative vital signs and post-operative nursing assessment. In 5 patients where the needle could not be clearly visualized on ultrasound, the injectate was seen within the caudal space in six and these blocks went on to be successful by post-operative nursing assessment.

In the three in which neither the needle nor the injectate could be visualized, the block was deemed a failure by both intraoperative and postoperative criteria in two.

Ultrasound findings are associated with correct prediction of a successful or unsuccessful postoperative block ($p < 0.001$).

Conclusions

Previous studies have shown that the injectate can be reliably visualized if the catheter or needle is placed in the caudal space, however most have detailed subjective difficulties with needle visualization. In our observations the needle was seen directly without difficulty, perhaps due to the predominant usage of 22g needles in our general practice. There is a definite correlation with direct or indirect visualization of the needle and final success of the block. Conclusive statements about the situation when neither needle nor injectate are seen are more difficult. Since judgement of a successful block by intraoperative change of vital signs or even postoperative evaluation is difficult, we put more value in US findings than subjective evaluation. Since in some patients a successful block could only be predicted by expanding of the caudal space, but no needle could be seen, we recommend the test injection of 1 ml sterile normal saline before the actual local anaesthetic.

References

1. Schwartz D et al. Ultrasonography and paediatric caudals. *Anesth Analg* 2008;106: 97-9