

Ultrasound Guided Epidural Placement

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Description

There is a lack of assessment information that anesthesia providers are equipped with to accurately and safely locate the epidural space.

Student registered nurse anesthetists often have a lack of knowledge and familiarity with the use of ultrasound to assist with epidural placement.

The aim of this project was to educate 26 SRNAs with a PowerPoint presentation and demonstration to increase their knowledge and interest in using ultrasound in the future to assist with placing epidurals.

Problem

Without the use of ultrasound, there is no diagnostic information on the optimal puncture point and direction of needle, of expected angle, and depth for epidural placement.

Blind loss of resistance at unknown interspaces can lead to:

- Repeated attempts at placement for patients
- Increased risk of epidural failure
- Decreased patient satisfaction
- Accidental dural puncture resulting in a post-dural puncture headache caused by leakage of cerebrospinal fluid

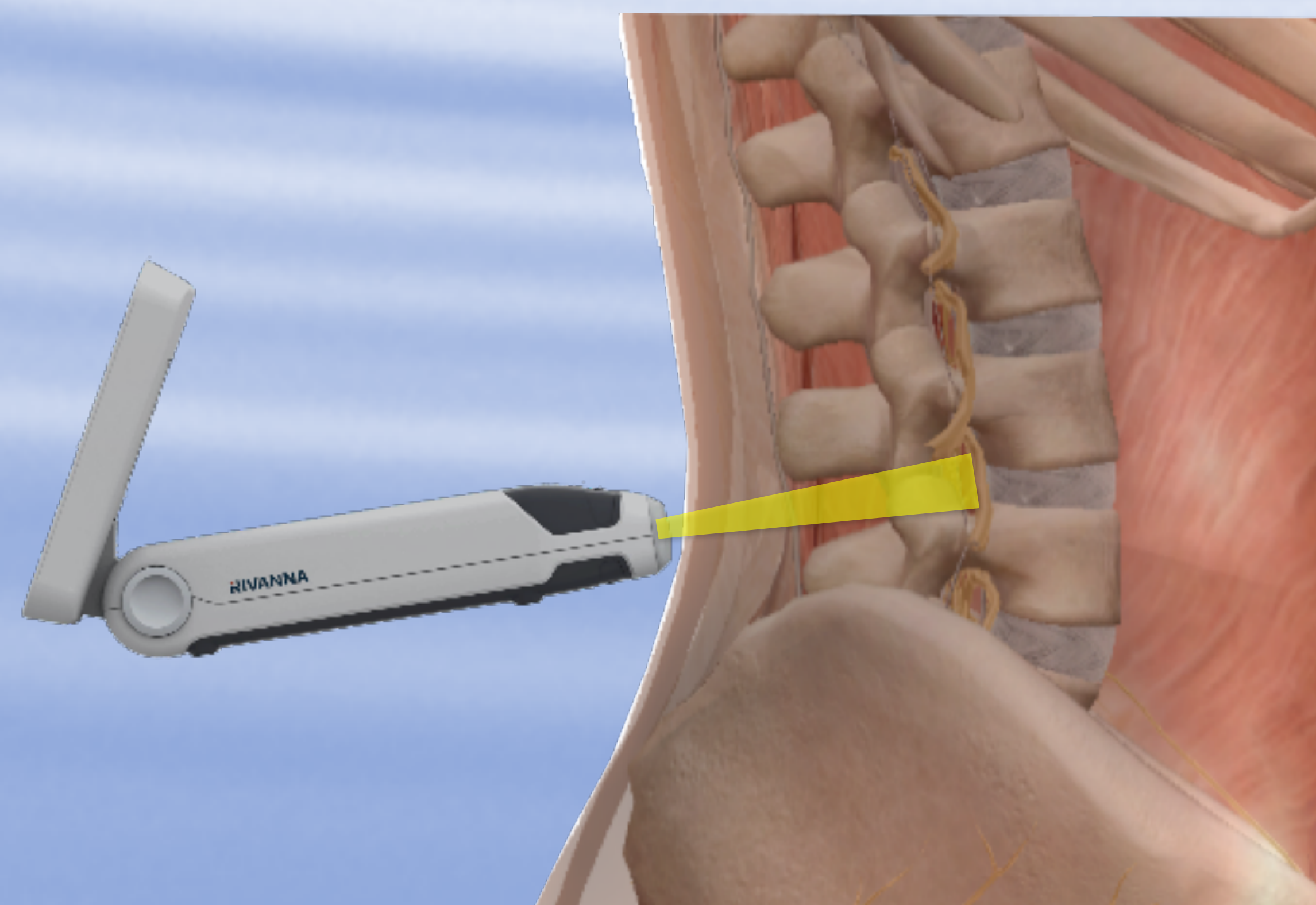
Literature Review

Kwok and Karmakar (2010) have determined that a pre-puncture scan, or scout scan, allows the operator to identify the midline and accurately determine the interspace for needle insertion, which are useful in patients in whom anatomic landmarks are difficult to palpate.

It also allows the operator to preview the neuraxial anatomy, predict the depth to the epidural space, and determine the optimal site and trajectory for needle insertion.

Ultrasound guidance can be useful for patients with:

- Edema of the back
- Scoliosis
- Post laminectomy surgery
- Previous spinal instrumentation
- Obesity



Outcomes

Two identical tests were administered to 26 SRNAs both before and after a power point presentation was given.

The average test score increased from 4.9615 to 7.3846 between pretest and posttest assessments.

Statistical analysis was completed using a paired-t test in order to determine significant outcomes.

Paired Samples Test								
	Paired Differences				t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 PreTest - PostTest	-2.42308	1.87985	.36867	-3.18237	-1.66379	-6.572	25	.000

The obtained t score was -6.572 with an associated p value of < .05 which is statistically significant. It can be concluded that the lecture significantly increased the SRNAs' test performance as indicated by the increase in average scores.

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 PreTest	4.9615	26	1.53573	.30118
PostTest	7.3846	26	1.23538	.24228

Conclusions

The anticipated outcome of this project was an increase in knowledge among first year SRNA students about the use of ultrasound for epidural placement.

Based on the results of the paired-t test it can be concluded that knowledge increased among the SRNAs.

Implications of this project include recognition that the overall increase in knowledge and interest in the beneficial uses of ultrasound in the placement of epidurals may lead to increased use of ultrasound in the future by the participants.

This has the potential to increase satisfaction and safety for patients in the future.

References

*References printed on back