

Ultrasound Scanning of Adductor Canal Block Evaluating Trans Fascia Vasto-Adductoria Spread Patterns: A Case Series

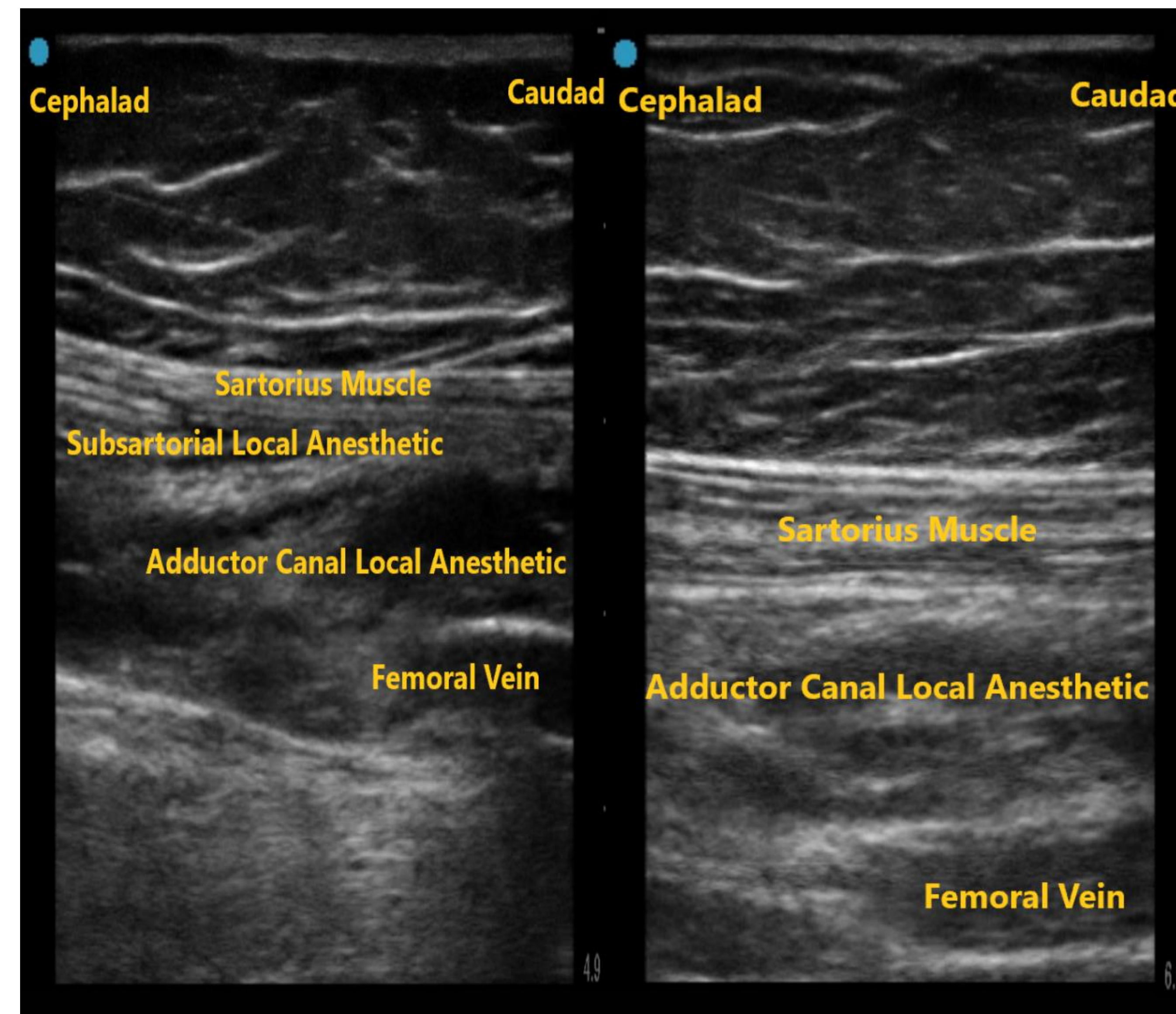
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Introduction

- The adductor canal (AC) block is currently thought to benefit total knee arthroplasty (TKA) by affecting the saphenous nerve (SN) and nerve to vastus medialis (NVM). [1]
- Studies in cadavers evaluating the spread of injectate of the adductor canal through dissection have demonstrated interfascial spread patterns including the posteromedial branch of NVM as well as a sub-sartorial compartment [2,3].
- This case series aimed to evaluate such spread of local anesthetic injectate through the roof (V-A fascia) of the canal using ultrasound following ACB in patients who arrived for primary TKA

Materials/Methods

- This case report is devoid of identifiable patient information and is exempt from IRB review requirements per institutional policy.
- Patient informed consent was obtained prior to submission.
- All patients received preoperative AC block with 30 ml of 0.5% bupivacaine under standard ASA monitoring with ultrasound guidance using in-plane technique without any complications.
- Ultrasound scanning was then done along the longitudinal axis of the AC to evaluate the injectate spread in each patient (Figure 1).



Results

Patient	A	B	C	D	E
Age (years)	63	78	56	79	80
Sex	Male	Female	Female	Female	Male
Height (cm)	170.2	160	167.6	139.7	160
Weight (kg)	93	92.5	85.7	64.6	113.4
BMI (kg/m ²)	32.1	35.6	30.6	32.9	43.6
ASA	II	III	III	II	III

Patient	A	B	C	D	E
Local Anesthetic Spread	Subsartorial and adductor canal spread	Subsartorial and adductor canal spread	Adductor canal spread	Adductor canal spread	Adductor canal spread
Preoperative NRS Pain Score	0	6	5	7	0
Postoperative Mean NRS Pain Score	3	4	5	6	3
Postoperative Opioid Medications in MME (milligrams)	20	7.5	75	118.75	37.5
Surgery Time (minutes)	86	80	79	59	81
Torniquet Time (minutes)	56	51	51	0	0
PACU Time (minutes)	85	122	160	83	87
Time to 1st Non-Opioid Pain Medication After Surgery (minutes)	32	202	221	239	301
Time to 1st Opioid Pain Medication After Surgery (minutes)	322	50	82	15	301
Time to Ambulate After Surgery (minutes)	233	215	460	185	282
Time to Discharge (hours)	After 24	Before 24	Before 24	After 24	After 24

- Two (A and B) among the five patients demonstrated sub-sartorial spread in addition to the adductor canal spread
- These two had the least opioid consumption while other characteristics were comparable with patients (C, D and E) who did not demonstrate sub-sartorial spread

Discussion and Conclusion

- Roof of the adductor canal is a continuous unbroken fascia vasto-adductoria (FVA).
- The distal end of FVA is consistently pierced by arterial pedicles from femoral artery to sartorius muscle and occasionally by communicating nerve branches from saphenous nerve to medial femoral cutaneous branches above the adductor canal. [3]
- Sub-sartorial spread of local anesthetic appears to correlate with reduced opioid consumption after surgery.**
- The sub-sartorial space includes a plexus of nerves formed by branches of the SN and anterior branch of the obturator nerve. [4] These may contribute to TKA analgesia.
- Alternatively, sub-sartorial spread of local anesthetic may simply correlate with interfascial spread to NVM or femoral cutaneous branches. Thus, sub-sartorial space could be a surrogate marker and predictor of better analgesia.

References

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