



# Quadratus Lumborum Blocks for Fast Track Liver Transplantation

Mihaela Visoiu, M.D.<sup>1</sup>, Daniela Damian, M.D.<sup>2</sup>, Michael Kolan, M.D.<sup>3</sup>, Kyle Soltys, M.D.<sup>4</sup>, Armando Ganoza, M.D.<sup>4</sup>, Sindhi Rakesh, M.D.<sup>4</sup>  
George Mazariegos, M.D.<sup>4</sup>

Department of Anesthesiology and Transplant, Children's Hospital of Pittsburgh of UPMC, Pittsburgh, Pennsylvania

## INTRODUCTION

Postoperative pain immediately following liver transplantation can be significant and delay extubation. Ultrasound guided quadratus lumborum blocks (QLB) can facilitate extubation in the operating room and decreased postoperative opioid consumption.

## METHODS

We performed a retrospective chart review and identified 7 patients (4-29 years, mean 17.4 years) who underwent liver transplantation and had bilateral quadratus lumborum single injection nerve blocks. Four patients had maple syrup urine disease, two patients had Crigler-Najjar syndrome and one patient had ornithine transcarbamylase deficiency. Three patients received a cadaveric liver and donated their liver to other recipients. Remifentanyl (5 patients), Sufentanyl (1) and Fentanyl (6) were used during maintenance of anesthesia. Patient controlled analgesia with hydromorphone was started immediately after extubation. Postoperative pain scores and consumption of analgesics were presented until 24 hours after conclusion of surgery.

## RESULTS

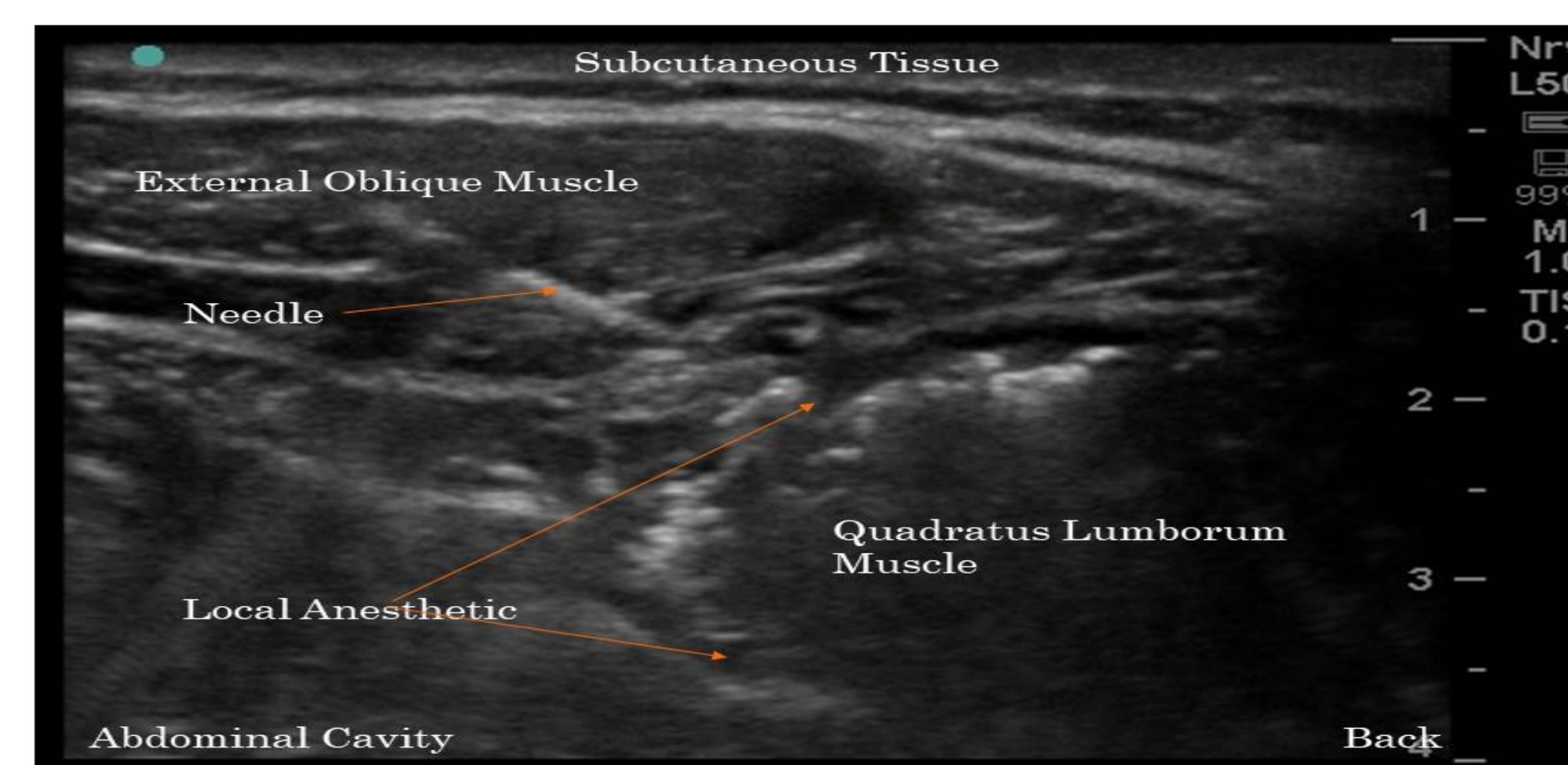
Demographic data and surgical characteristics are presented in Table 1. All blocks were performed under general anesthesia, using ultrasound, before surgery started. Ropivacaine was the local anesthetic used for all patients and ranged in concentration from 0.2%-1%. Mean volume of ropivacaine administered was 0.3 ml/kg/block (SD +/- 0.09). The mean total amount of ropivacaine administered to each patient was 3.2 mg/kg (SD +/- 0.7).

## RESULTS (CONT.)

The mean reperfusion time was 273.4 minutes (SD +/- 34.7) after the blocks were performed. Six patients received heparin at a mean interval of 265.3 minutes (SD +/- 64.1) after the blocks were performed. Six patients were extubated immediately after surgery in the operating room. One patient remained intubated secondary to prolonged hemodynamic instability after reperfusion related to the surgical graft. This patient was excluded from the pain score and hydromorphone consumption calculations. There were no incidents of reintubation. Intraoperative and postoperative coagulation profiles are presented in Table 2. The mean pain score over the first 24 hours was 1 (SD +/- 1.6) and the mean hydromorphone consumption over the first 24 hours was 8.7 mcg/kg/hr (SD +/- 2.9).

Table 1. Demographic data and surgical characteristics

	QLB Group
<b>Age, years</b>	
Mean(SD)	17.4(9.5)
<b>Weight, kg</b>	
Mean(SD)	51.2(18.4)
<b>Female, number (%)</b>	6 (85.7)
<b>Male, number (%)</b>	1 (14.3)
<b>Operating room time, min</b>	
Mean(SD)	552.3(99.7)
<b>Surgical time, min</b>	
Mean(SD)	454.7(81.0)
<b>Block time, min</b>	
Mean(SD)	5.7(1.4)



## RESULTS (CONT.)

Table 2. Intraoperative and postoperative coagulation profiles

	After Reperfusion		Pediatric ICU Arrival	
	Minimum	Maximum	Minimum	Maximum
Platelets	46	263	130	271
Fibrinogen	41	>1800	103	656
PT	16.2	59.2	16.6	40.1
PTT	36	>200	20	70
INR	1.3	6.5	1.3	4.0

## CONCLUSION

With proper patient selection, quadratus lumborum blocks can be effective for intraoperative and postoperative pain control, and can facilitate early extubation. The practice of fast track anesthesia may decrease the incidence of pulmonary complications and improve graft function. The blocks should be done preoperatively to avoid any hematoma formation after reperfusion and heparin administration. More cases are needed to confirm the efficacy and safety of QLB for this patient population.

## REFERENCES

Aniskevich S, et al. Fast track anesthesia for liver transplantation: Review of the current practice World J Hepatol. 2015 Sep 18; 7(20): 2303–2308

## Author Notes

- 1 Acute Pediatric Pain Service, Department of Anesthesiology, Children's Hospital of Pittsburgh of UPMC
- 2 Department of Anesthesiology, Children's Hospital of Pittsburgh of UPMC
- 3 Department of Anesthesiology, Midwest Physician Anesthesia Services, Columbus
- 4 Department of Transplant, Children's Hospital of Pittsburgh of UPMC