

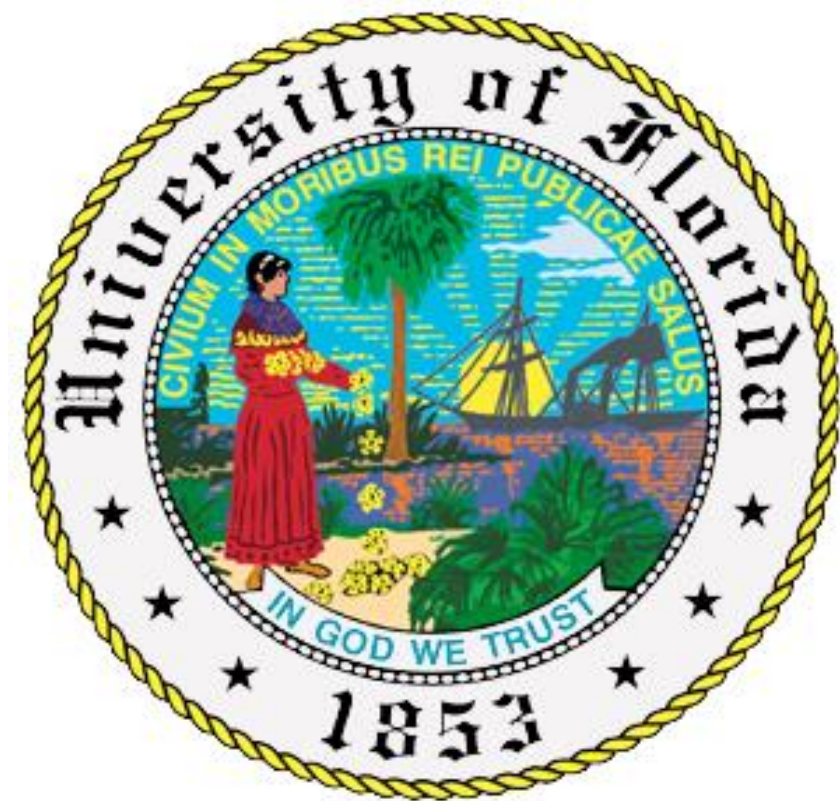


Ketorolac-Propofol vs Fentanyl-Propofol IV Sedation in Uncooperative Children

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INTRODUCTION

Various medicinal compounds have been used lately for sedation and pain relief in children some of which are among the most regularly used in Procedural dental sedation.

Midazolam has been used widely along other sedatives including Propofol as a short-acting medication and Fentanyl or Demerol as the opioids of choice used routinely which have high analgesic affinity, rapid onset and a relatively short duration of action.

Ketorolac is among the non-steroidal anti-inflammatory drugs that is used to relieve moderate to severe pain with fewer side effects than opioids.

While Fentanyl is less responsible for nausea and vomiting than other opioids, its respiratory depression remains to be a problem.

Atropine is recommended for use during the sedative procedures to control the salivary secretion rate. It helps preventing laryngospasm also minimizes bradycardia produced by Vagus nerve stimulation.

PURPOSE

To compare the effectiveness of Fentanyl/Propofol and Ketorolac/Propofol in sedation and pain free dental treatment of uncooperative 2-6 year-old children.

MATERIALS AND METHODS

30 uncooperative children were recruited and randomly allocated into one of the two groups:

-Group A: IV Fentanyl/Propofol in their 1st and Ketorolac/Propofol in their 2nd sedation session.

Group B received the same medications in the reverse order.

Similar teeth with treatment needs were selected for the two sessions.

- Fentanyl (1 µgr/kg), Propofol (2 mg/kg), and Atropine (0.02 mg/kg) was administered to the child in one session and
- Ketorolac (1mg/kg) Propofol (2 mg/kg) and Atropine (0.02 mg/kg) at other session.
- Constant monitoring of vital signs was conducted from baseline, to IV, LA and every 15 minutes time points to discharge.

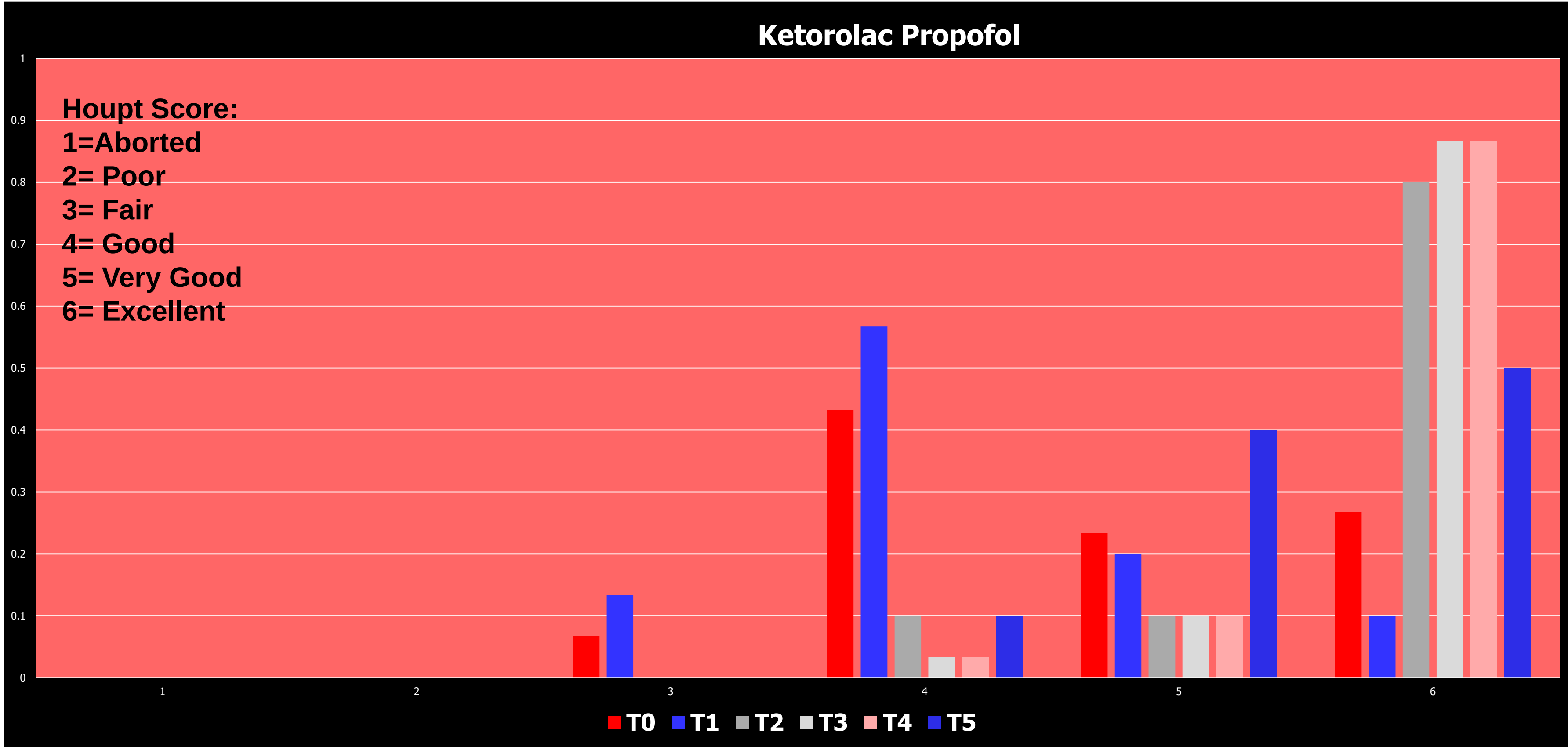
- RCT registered link:
<https://ethics.research.ac.ir/IR.SBMU.DRC.REC.1399.149>

RESULTS

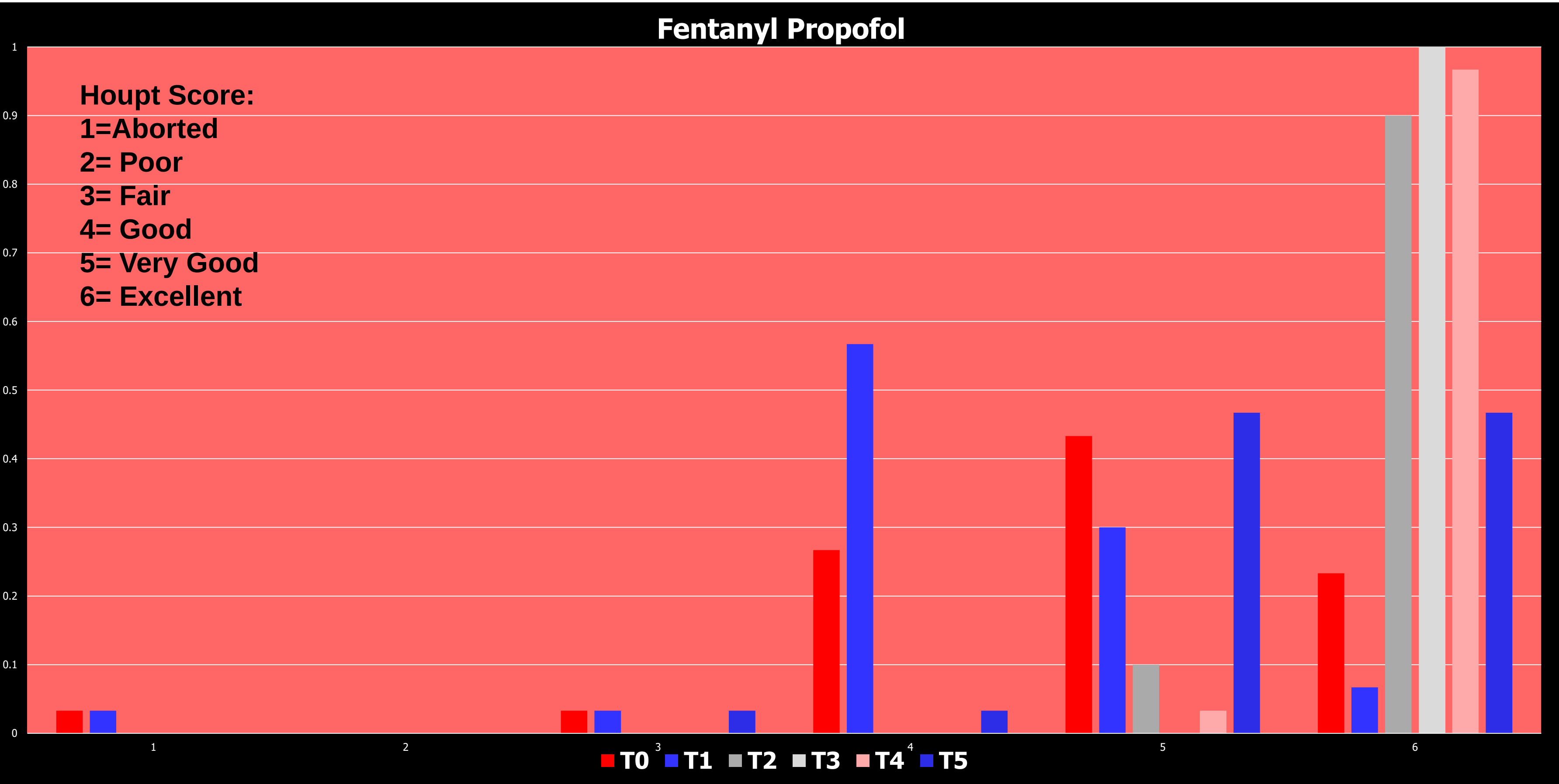
Sample: Thirty children, 14 Female (46.7%) and 16 Male (53.3%) with mean age of 3.53 ± 1.14 years.

Employed medications showed no carryover effect on the level of sedation outcome, oxygen saturation and heart rate (p>0.05).

Propofol/Ketorolac was as successful as Propofol/Fentanyl in sedation achieved while sedation with opioids increases the possibility of nausea and vomiting, delaying discharge and requires more post discharge care. Children who received Fentanyl had higher oxygen saturation (in both periods of anesthesia) than those who received Ketorolac (p=0.006). The effect of treatment type on the oxygen saturation level (p=0.75) and the heart rate (p=0.68) was not significantly different between groups.



Graph 1. Overall sedation level (Houpt Score) in Test group at different time point



Graph 2. Overall sedation level (Houpt Score) in Control group at different time point

Group		Time					
		Baseline	IV Catheter	Injection	15 th Min	30 th Min	Discharge
Fentanyl	Mean	118.37	127.63	126.73	126.30	126.90	121.70
	SD	19.26	15.75	16.11	13.71	15.19	12.28
Ketorolac	Mean	117.67	123.13	126.33	126.77	127.87	121.23
	SD	15.13	14.45	10.54	12.42	11.31	10.73
The difference between groups	Mean	0.70	4.50	0.40	-0.47	-0.97	0.47
	SD	15.25	14.42	12.69	14.70	14.17	13.29

Table 1: Changes in the heart rate in different phases of treatment.

Group		Time					
		Baseline	IV Catheter	Injection	15 th Min	30 th Min	Discharge
Fentanyl	Mean	96.53	98.60	98.73	98.20	98.57	96.70
	SD	1.36	1.38	1.20	1.95	1.17	1.91
Ketorolac	Mean	97.17	98.80	98.00	98.67	98.67	96.47
	SD	1.72	1.67	2.99	1.49	1.12	2.16
The difference between groups	Mean	-0.63	-0.20	0.73	-0.47	-0.10	0.23
	SD	1.96	1.86	3.05	2.64	1.58	2.21

Table 2: Changes in the oxygen saturation level in different phases of treatment.

CONCLUSIONS

Comparing the sedative quality of intravenous Propofol/Ketorolac, and Propofol/Fentanyl it appears that Ketorolac has a great potential in creating sedative and analgesic effects in children when replacing Fentanyl with minimal to no hemodynamic effects.