Effect of epidural patient-controlled analgesia on postoperative bleeding after unilateral total knee replacement arthroplasty: a propensity score-matching analysis

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Background

- ◆ Epidural patient-controlled analgesia (PCA)
 - ✓ Better pain relief compared to parenteral regimens
 - ✓ Inconsistent results of previous studies regarding the effect of epidural PCA on Postoperative bleeding.
- ◆ Aimed to compare the effect of epidural and IV PCA on postoperative bleeding of unilateral TKRA.

Methods

- ◆ Propensity score-matching variables
 - : sex, age, body mass index, ASA physical status class, preoperative laboratory values (platelet count, prothrombin time, and aspartate transaminase, alanine transaminase, protein, albumin, serum creatinine, blood urea nitrogen, haemoglobin, and glucose levels), anaesthesia technique, re-do TKRA, primary diagnosis (osteoarthritis, rheumatoid arthritis, infectious arthritis, traumatic knee injury, and ankylosing knee), and intraoperative variables (crystalloid amount, colloid amount, estimated blood loss, and Op site drainage)
- ◆ Compared the postoperative blood loss from the operation site between the groups.
- ◆ Conditional logistic regression to assess the associations between epidural PCA and red cell transfusion of >3 units

Key words: epidural PCA, postoperative bleeding, red cell transfusion, unilateral total knee replacement arthroplasty.

Postoperative variables between the intravenous PCA and epidural PCA groups			
	PS-matched		
	Intravenous PCA (n = 106)	Epidural PCA (n = 106)	P value
Postoperative hypotension ^a	8 (8.4%)	7 (7.4%)	1.000
Postoperative ICU admission	1 (1.1%)	3 (3.2%)	0.625
Postoperative re-admission	3 (3.2%)	1 (1.1%)	0.625
Hospital stay (day)	16.9 ± 7.1	15.1 ± 8.0	0.107
Recovery room variables			
Crystalloid use (ml)	281.5 ± 375.5	264.2 ± 348.3	0.711
Colloid use (ml)	64.5 ± 116.5	88.7 ± 194.6	0.301
pRBC use (U)	0.2 ± 0.4	0.2 ± 0.4	0.356
Fresh frozen plasma use (U)	0	0	0.690
Operation site drainage (ml)	45.9 ± 125.1	42.1 ± 150.7	0.855
Urine output (ml)	167.9 ± 236.4	169.2 ± 148.2	0.965
Postoperative ward variables			
Maximal NRS	5.6 ± 2.2	6.0 ± 2.1	0.818
pRBC use (U)	1.7 ± 1.5	1.9 ± 1.3	0.339
pRBC use >3 units	17 (16.0%)	32 (30.2%)	0.014
Fresh frozen plasma use (U)	0	0.02 ± 0.21	0.320
Operation site drainage (ml)	737.8 ± 410.1	900.9 ± 369.1	0.007

Conditional logistic regression analysis of epidural PCA predicting packed red blood cell transfusion more than 3 units

Variable	Odds ratio	95% confidence interval	P value
Epidural PCA	2.500	1.201 – 5.205	0.014

Conclusions

- ◆ Epidural PCA is strongly related to postoperative bleeding after unilateral TKRA, as compared to intravenous PCA.
- ◆ The incidence of transfusion of more than 3 units is strongly associated with postoperative epidural PCA.