



Effect of Intra-articular drain on pain in postoperative arthroscopic anterior cruciate ligament reconstruction: a randomized control trial

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Disclosure



No conflicts of interest to declare



Background



Arthroscopic anterior cruciate ligament reconstruction causes moderate to severe pain(1-2) in acute post-operative period, which delays rehabilitation program(3) and affects patient's satisfaction. At present, post-operative analgesic drugs and tranexamic acid are used to alleviate pain and reduce hemarthrosis(4-7) which assumed to cause pain. Many surgeons use intra-articular drain as their routine(8) while others do not use it.

From our literature review, we found that benefits of using intra-articular drain in ACLR in aspect of pain is still unclear(9-10).





Objectives



Primary objective:

- To compare post-operative pain after ACLR with hamstrings graft with and without intra-articular drain by VAS at 48 hours

Secondary objectives:

- Post-operative VAS at 6,12,24 and 36 hours
- Post-operative morphine consumption at 6,12,24 ,36 and 48 hours
- Straight leg raising test and ROM
- Incidence of knee joint aspiration
- Hemarthrosis grade



Methods



Inclusion criteria

- ✓ Patient diagnosed with ACL injury who planned for primary arthroscopic assisted ACL reconstruction with hamstrings autograft
- ✓ Patients who were between 18-60 years old
- ✓ Patients who were planned for spinal anesthesia

Exclusion criteria

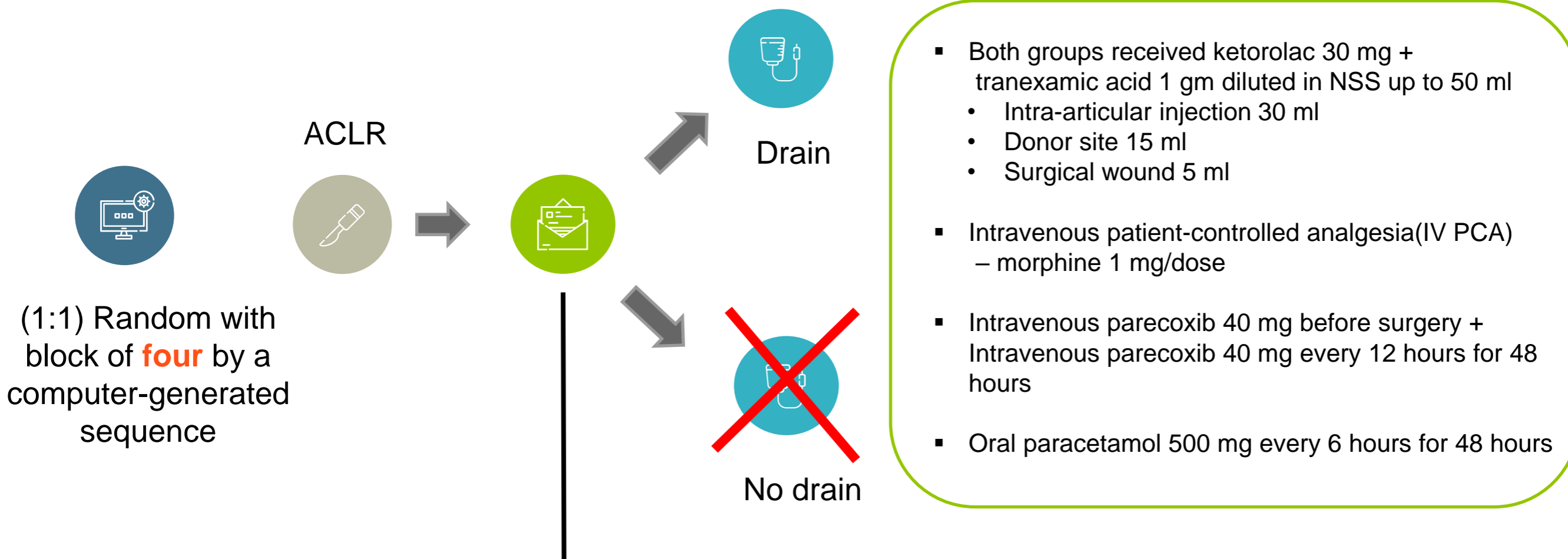
- ❖ Contraindicated for spinal anesthesia
- ❖ Renal insufficiency $GFR < 30 \text{ mL/min}$
- ❖ Risk for cardiovascular thrombotic event
- ❖ History of GI bleeding
- ❖ Concomitant ligament injuries needed surgical treatment or fracture
- ❖ Previous surgery on the ipsilateral knee
- ❖ History of abusive drug use
- ❖ Received steroid within 48 hours
- ❖ Mental disabilities or unable to cooperate
- ❖ Deny to participate



Methods



Drain was clamped for 1 hour



- Both groups received ketorolac 30 mg + tranexamic acid 1 gm diluted in NSS up to 50 ml
 - Intra-articular injection 30 ml
 - Donor site 15 ml
 - Surgical wound 5 ml
- Intravenous patient-controlled analgesia (IV PCA) – morphine 1 mg/dose
- Intravenous parecoxib 40 mg before surgery + Intravenous parecoxib 40 mg every 12 hours for 48 hours
- Oral paracetamol 500 mg every 6 hours for 48 hours

Open sealed opaque envelope before surgical wound closure.



Methods



Enrollment

Assessed for eligibility(n=44)

Excluded (n=4)

- Not meeting inclusion criteria(n=3)
- Declined to participate(n=1)

Randomized(n=40)

Allocation

ACLR with intra-articular drain (n=20)

ACLR without intra-articular drain (n=20)

Conversion to GA n = 1

Did not receive post-op parecoxib n = 1

Analysis (n=19)

- VAS at 48 hours
- Post-operative VAS
- Post-operative Morphine consumption
- Straight leg raising test and ROM
- Incidence of knee joint aspiration
- Hemarthrosis grading

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Results



Demographic data

	No drain	Drain	P-value
Patients(n)	19	19	
Age(years)	29(21.5-42)	32(23.25-42)	0.483
Sex			>0.99
- Male	17	18	
- Female	2	1	
BMI	23.87±2.61	25.18±3.07	0.16
Preoperative pain at rest(0-100)	0	0	0.16
Preoperative pain with motion(0-100)	0	10	0.49
Preoperative effusion grade	1	1	0.54
No meniscal surgery	9	9	0.90
Operative time	98.9±22.3	86.4±24.83	0.11

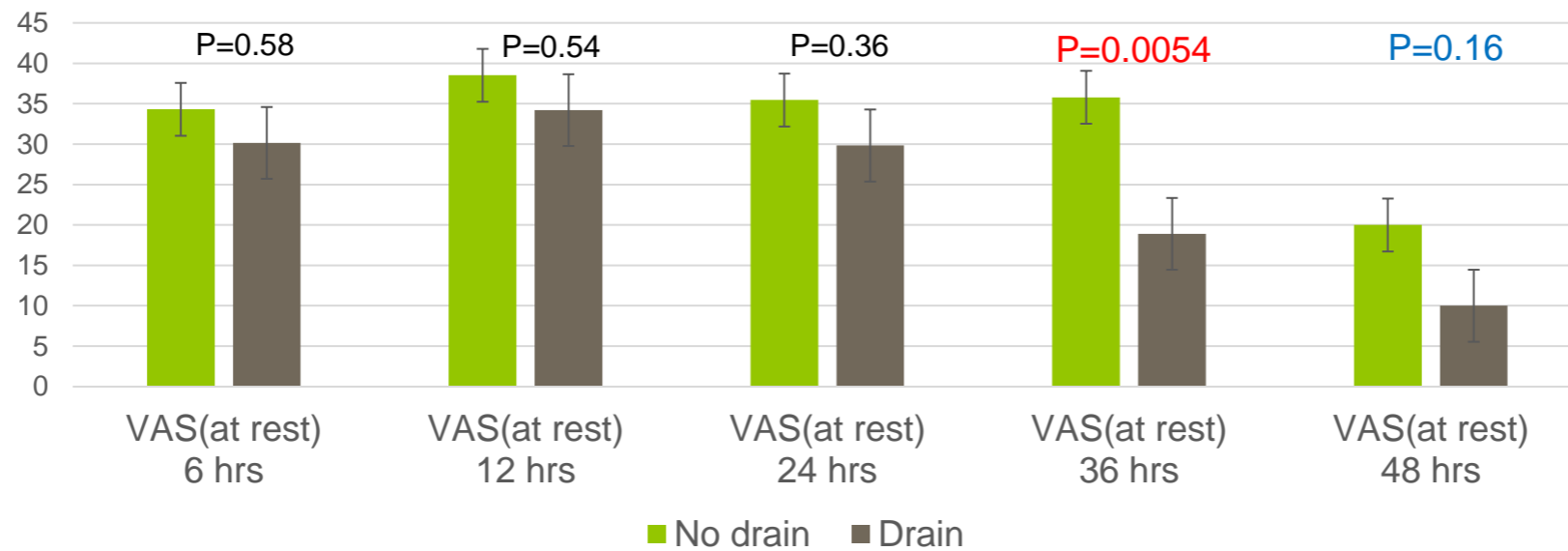
Independent T-test, Mann–Whitney U test and Fisher's exact test were used for demographic data analysis



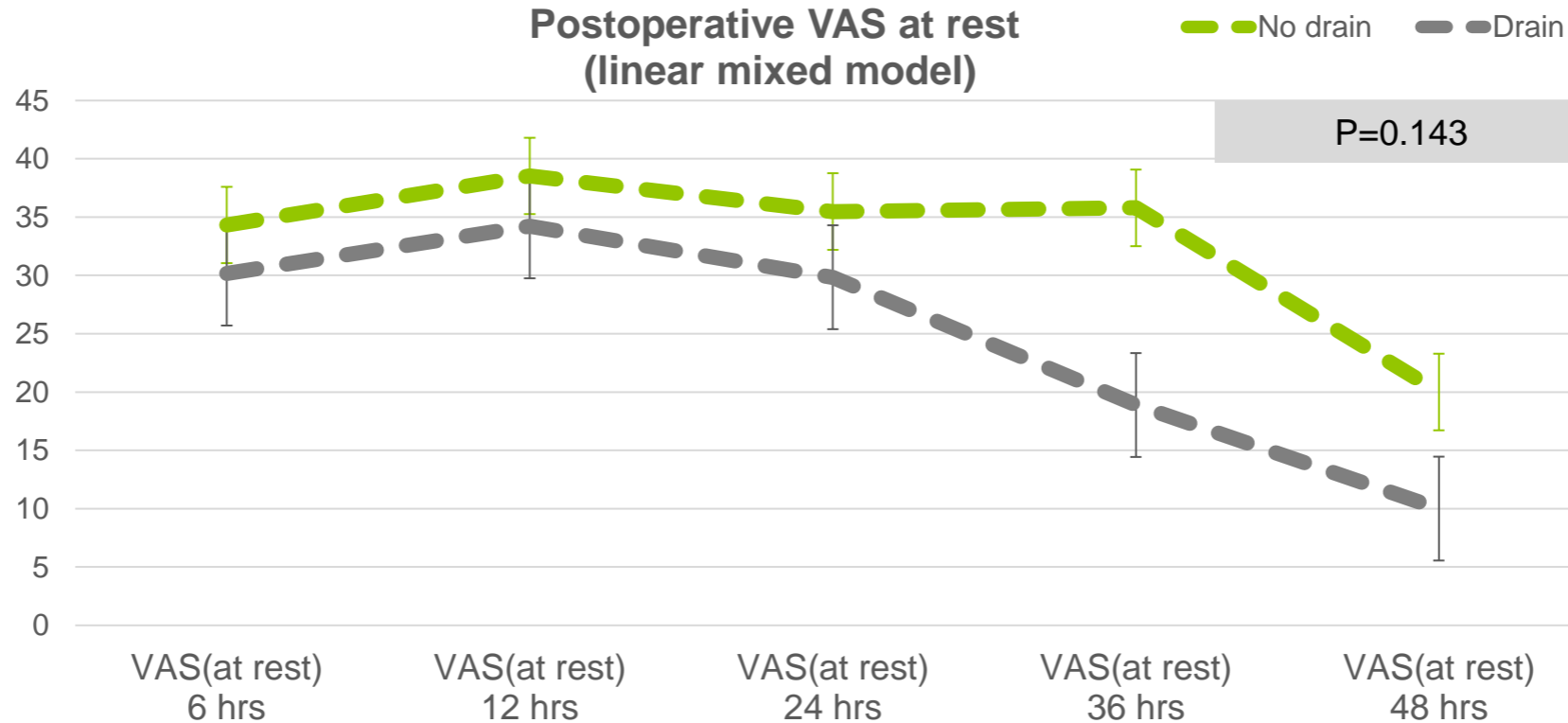
Results



Postoperative VAS at rest



Postoperative VAS at rest (linear mixed model)

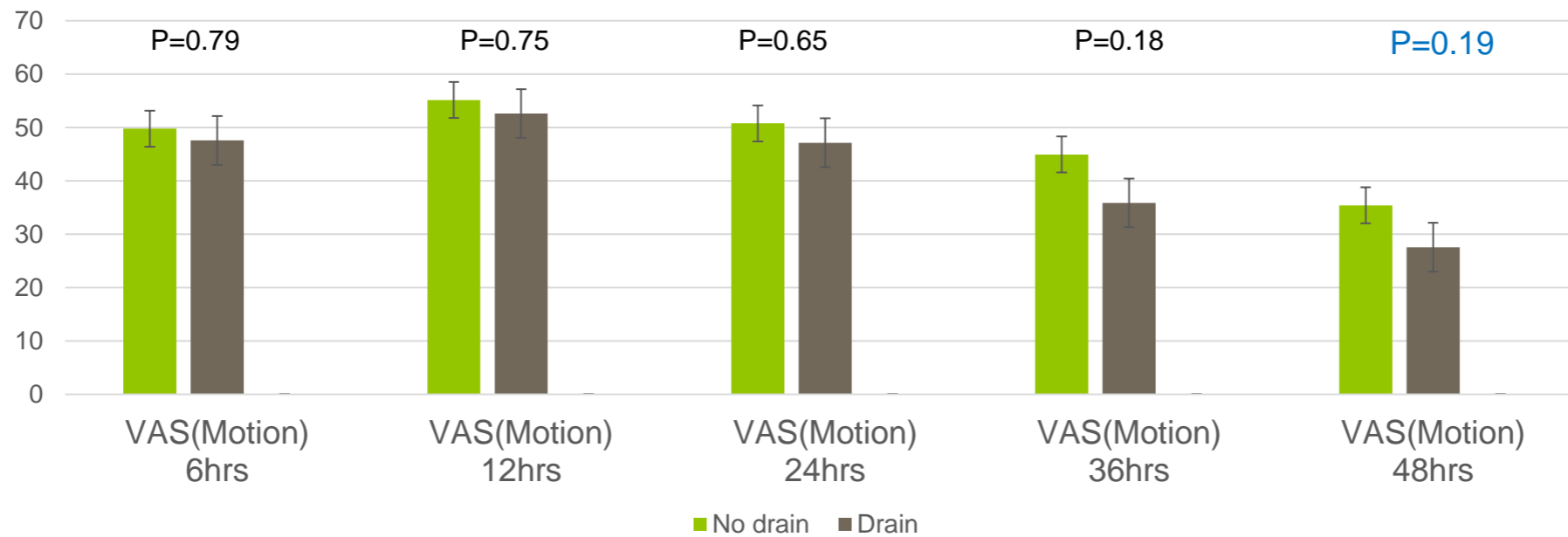




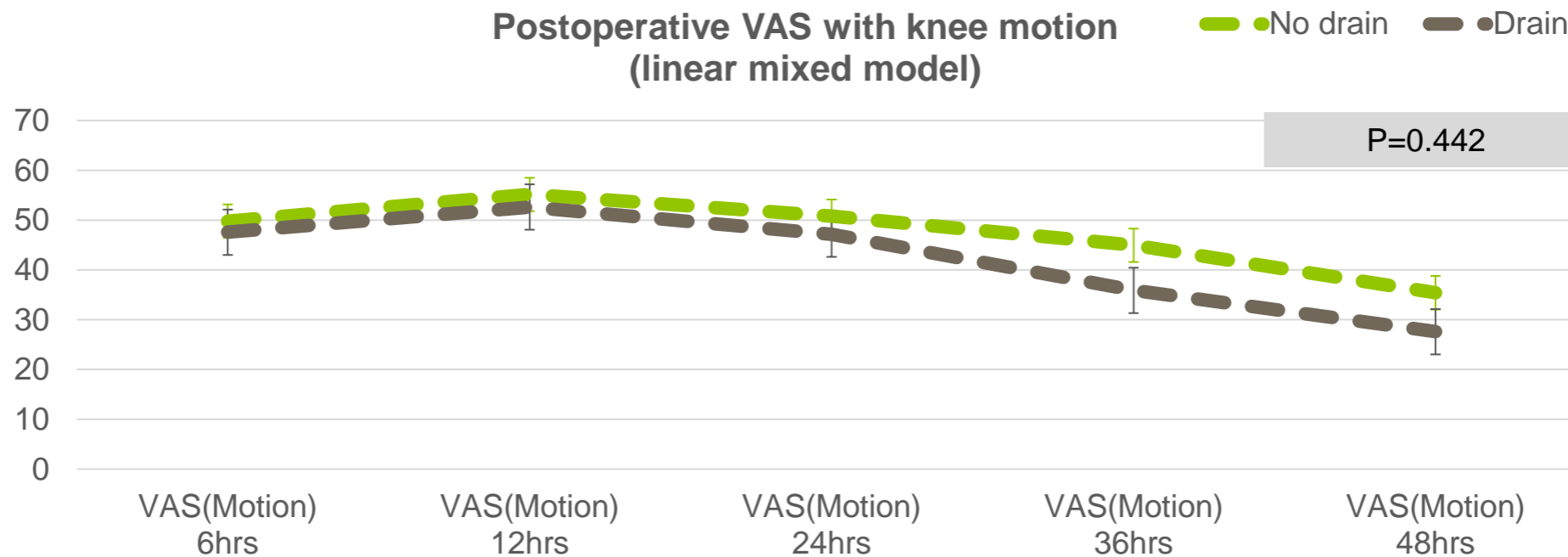
Results



Postoperative VAS with knee motion



Postoperative VAS with knee motion (linear mixed model)





Discussion



The results have shown that the postoperative VAS at rest at 36 hours was higher in the no drain group compared to the drain group although the results are not statistically significant.

Factors which could affect the results were well controlled from operation(AACLR with autologous hamstrings graft), method of anesthesia all the way to the postoperative care protocol.

Limitation of the study

- Small sample size
- Lack of longer period of pain assessment
- No assessment hemarthrosis as milliliter or hematocrit in no drain group



Conclusion



Intra-articular drain after ACLR did not show difference in term of reducing post-operative pain compared to no drain group.

Morphine consumption, straight leg raising test, post-operative range of motion, incidence of knee joint aspiration and hemarthrosis grade were not significantly different between the groups.



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