

**Acute postoperative pain
is an independent risk factor associated with
chronic postoperative pain
after total knee arthroplasty**

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COI disclosure

Hyogo Medical University,
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I have no conflict of interests related to
this presentation



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Purpose

To examine risk factors
for **CPSP** (Chronic post-surgical pain) after TKA
and to determine whether **APSP** (Acute post-surgical pain)
is associated with the development of CPSP.

Retrospective observational study



Methods

【Surgery】

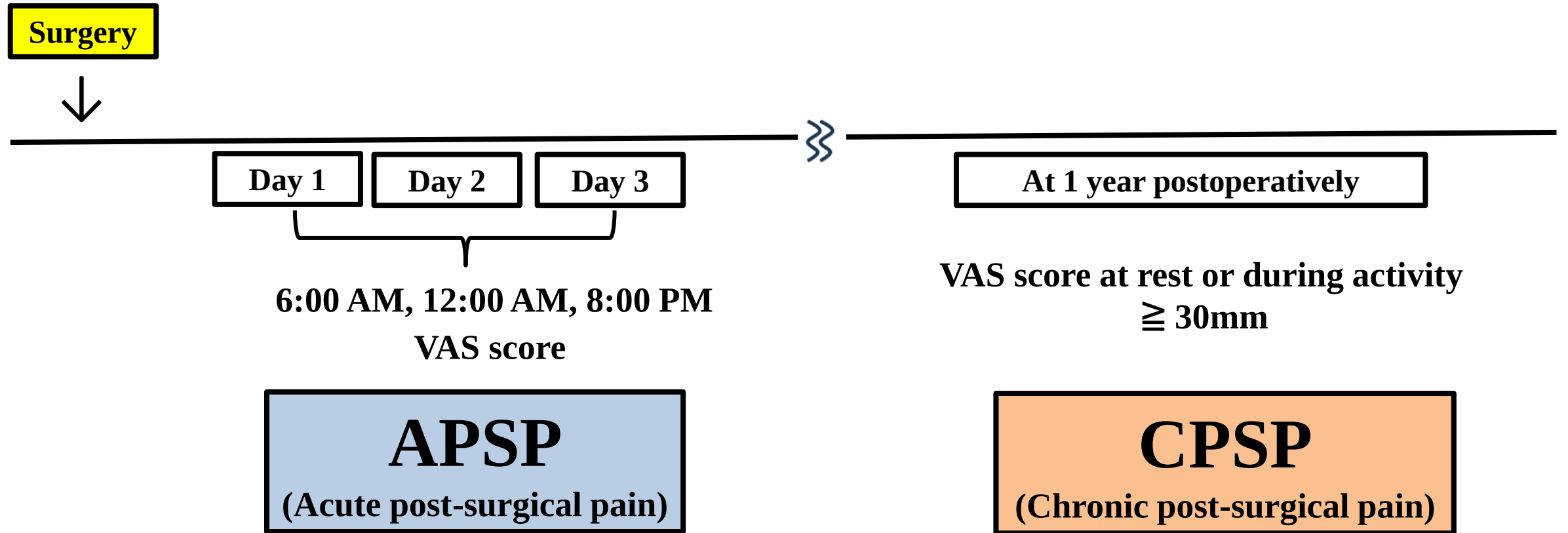
- ✓ Unilateral primary TKA for knee osteoarthritis
- ✓ Under general anesthesia
- ✓ Tourniquet was used / No drain

【Pain management】

- ✓ Intraoperative local infiltration anesthesia (LIA)
- ✓ Continuous intravenous administration of fentanyl (until 48 hours after TKA)
- ✓ Intravenous 1000mg acetaminophen
- ✓ Oral 200mg of celecoxib

Pain assessment

- ✓ The 100mm scale VAS score



Satisfaction assessment

【At 1 year postoperatively】

Very satisfied

Satisfied

Satisfied

Fairly satisfied

Same as before

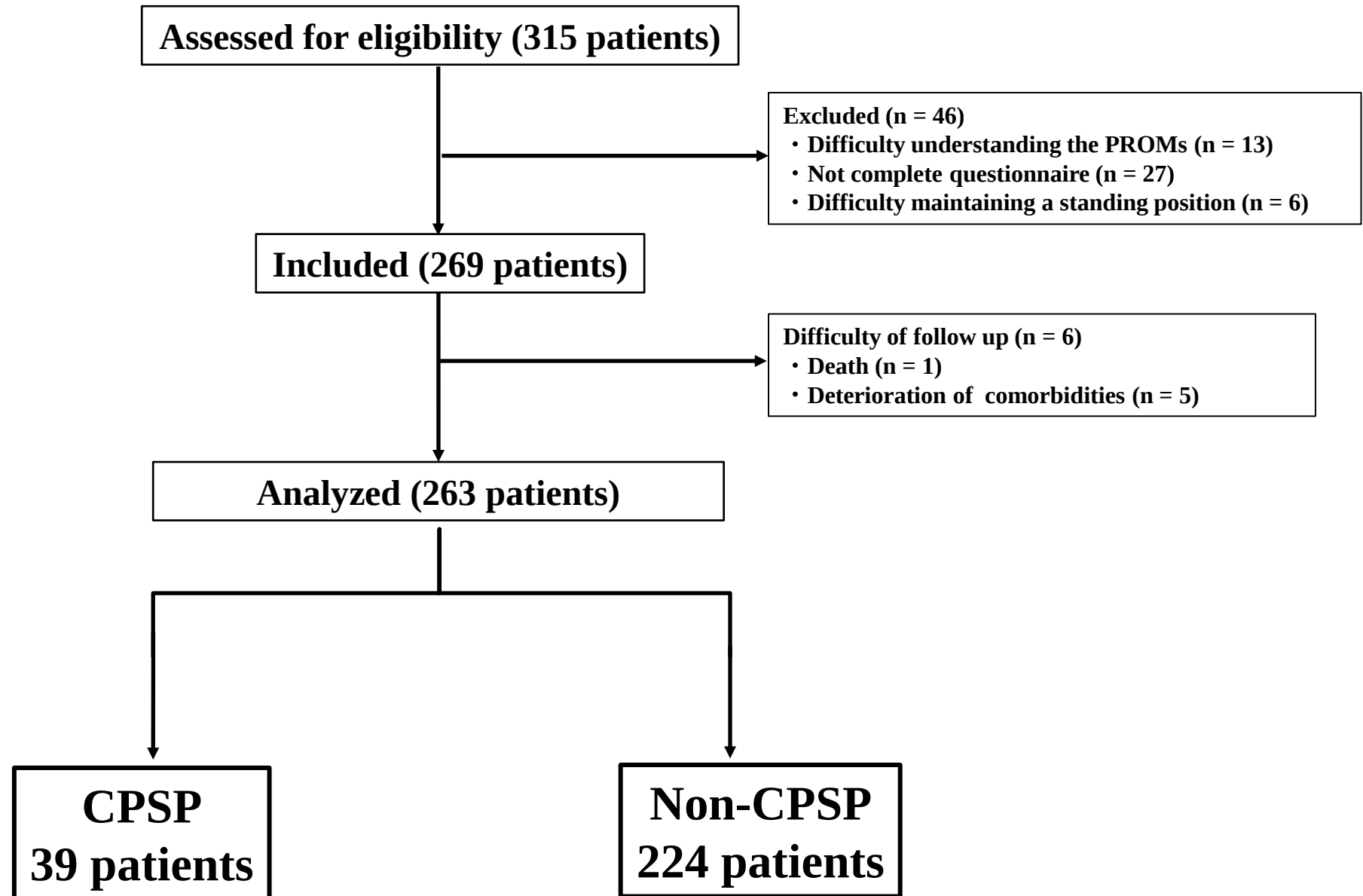
Fairly dissatisfied

Dissatisfied

Very dissatisfied

Dissatisfied

Results: Flow diagram



Results: Satisfaction assessment

【At 1 year postoperatively】

	CPSP group (n=39)	Non-CPSP group (n=224)	P-value
Satisfied	19	218	
Dissatisfied	20	6	<0.001

51.3% of patients in the CPSP group were dissatisfied
compared to 2.6% in the Non-CPSP group.

Results: Outcomes

	Total (n=263)	CPSP		P-value
		CPSP n= 39	Non-CPSP n=224	
Age, years	71.9±9.3	71.9±10.6	71.9±9.1	0.99
Sex (n, % female)	201 (76)	30 (77)	171 (76)	1.00
BMI (kg/m ²)	26.3±4.1	26.6±4.8	26.2± 4.0	0.56
Preoperative ROM (degree)				
Flexion	117.7 ± 15.2	118.7 ± 12.9	117.5 ± 15.6	0.66
Extension	-8.8 ± 8.1	-9.6 ± 6.9	-8.7 ± 6.9	0.53
Time length of surgery (min)	120.3 ± 18.9	119.8 ± 17.8	120.4 ± 19.2	0.85
Preoperative coronal alignment				
HKA-angle	187.5±8.3	185.1±9.7	187.9±7.9	0.051
LDFA	88.4±3.2	87.8±2.9	88.5±3.3	0.20
MPTA	85.0±3.6	85.7±4.8	84.9±3.4	0.18
Preoperative VAS score				
Rest pain	29±25.6	43.6±26.4	26.5±24.6	<0.001*
Activity pain	59±23.1	75.7±17.6	57.3±22.9	<0.001*
Pain catastrophizing scale (PCS)	29.1±12.3	33.6±10.4	28.2±12.5	0.012*
Central sensitization inventory (CSI)	23.9±13.0	28.3±14.5	23.2±12.6	0.022*

Results: Outcomes

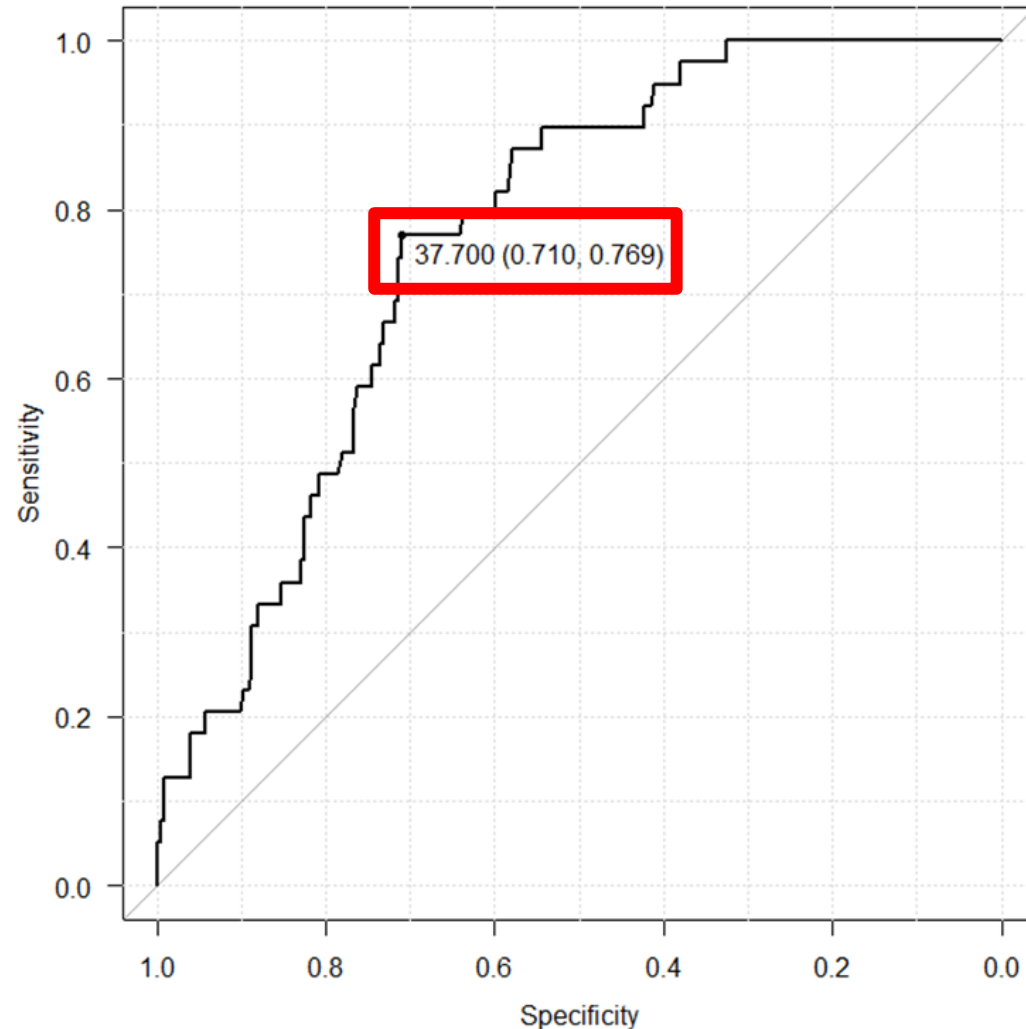
	Total (n=263)	CPSP		P-value
		CPSP n= 39	Non-CPSP n=224	
Preoperative KOOS				
Symptom	50.2±19.3	42.9±17.7	26.3±4.1	0.013*
Pain	44.1±17.5	38.6±15.9	26.2± 4.0	0.039*
Activity	54.8±18.1	47.1±18.1	56.1±17.7	0.004*
Function	18.4±17.8	14.3 ± 14.5	19.1 ± 18.2	0.13
QOL	25.1±16.6	23.5 ± 15.2	25.4 ± 16.9	0.53
Postoperative coronal alignment				
HKA-angle	180.9±2.6	181.1±3.1	180.9±2.5	0.69
LDFA	89.9±2.3	89.7±2.6	89.9±2.3	0.49
MPTA	89.3±1.6	89.3±1.6	89.3±1.6	0.95
Acute post-surgical pain (APSP)				
Rest pain	31.8±22.8	50.0±20.7	28.7±21.7	<0.001*
Activity pain	49.8±25.8	67.8±20.2	47.1±25.5	<0.001*

Results: Multivariate analysis

	Univariate analysis			Multivariate analysis		
	OR	95% CI	P-value	OR	95%CI	P-value
Preoperative VAS score						
Rest pain	1.02	1.01-1.04	<0.001*	1.01	0.98 - 1.04	0.361
Activity pain	1.03	1.01-1.06	0.001	1.03	0.99 – 1.07	0.159
Pain catastrophizing scale (PCS)	1.04	1.01-1.07	0.013	1.02	0.97 – 1.08	0.585
Central sensitization inventory (CSI)	1.03	1.00-1.05	<0.001*	0.98	0.94 – 1.02	0.410
Preoperative KOOS						
Symptom	0.977	0.959-0.995	0.014	0.96	0.92 – 1.01	0.102
Pain	0.979	0.958-0.999	0.040	1.04	0.97 – 1.11	0.243
Activity	0.972	0.952-0.992	0.005	0.99	0.95 – 1.05	0.982
Acute post-surgical pain (APSP)						
Rest pain	1.04	1.02-1.06	<0.001*	1.04	1.01 – 1.08	0.025*
Activity pain	1.04	1.02-1.06	<0.001*	0.996	0.95 – 1.04	0.829

Results: ROC curve analysis

【Cut-off value of APSP at rest】



Cut-off value: 37.7mm

Area under the curve: 0.766

95% CI: 0.699-0.834

Conclusion

APSP at rest is an independent risk factor associated with CPSP after TKA and the cut-off value of APSP at rest was a VAS score of 37.7mm.