

Table 4 Low back and leg pain scores 24 months after surgery

Pain score after surgery	Local bone graft	ICBG	Statistical analysis
Low back pain			
Visual analog scale (VAS)	1.8 ± 0.6	2.2 ± 0.7	N.S.
Japanese orthopedic association score (JOAS)	2.4 ± 0.8	2.5 ± 0.7	N.S.
Oswestry Disability Index (ODI)	22 ± 5	25 ± 4	N.S.
Leg pain			
Visual analog scale (VAS)	1.5 ± 0.6	2.0 ± 0.8	N.S.
Japanese orthopedic association score (JOAS)	2.4 ± 0.5	2.3 ± 0.6	N.S.

Table 5 Complications

	Local bone graft	ICBG	Statistical analysis (P)
Deep Infection	1	0	N.S.
Hematoma of spinal canal	0	0	N.S.
Hematoma of iliac crest	0	0	N.S.
Sensory loss around iliac crest	0	8	0.01
Pain around iliac crest	0	6	0.025

different between the two groups ($P > 0.05$). There was no significant difference in VAS score, JOAS, and ODI at final follow-up (24 months) after surgery among bone union in the local bone graft group, bone non-union in the local bone graft group, bone union in the ICBG group, and bone non-union in the ICBG group ($P > 0.05$) (Table 4).

Complications at final follow-up

Table 5 shows complications at final follow-up. There was a deep infection (surgical site infection) in the local bone graft group. There was no other complication in the local bone graft group. However, sensory disturbance around the iliac crest in eight patients and donor site pain in six patients were found in the ICBG group.

Discussion

In the current study, bone union, clinical results, and complications were examined after single-level posterolateral fusion surgery using a local bone graft versus an ICBG in a prospective randomized study. Rate and average duration of bone union were not significantly different in the local bone and ICBG groups. However, prolonged surgical time and complications such as donor site pain were observed in the ICBG group.

Some authors have reported complications from harvesting ICBG [1, 4, 5, 8, 11]. A consecutive series of 261 patients, whose bone graft harvest was conducted by one surgeon, was studied [5]. Major complications such as

hematoma, wound infection, reoperation, and chronic severe pain occurred in 10% of patients [5]. Minor complications such as dysesthesia and superficial infection occurred in 39% of patients [5]. In the current study, sensory disturbance around the iliac crest in eight patients (20%) and donor site pain in six patients (15%) were seen in the ICBG group 2 years after surgery.

Some authors have reported the efficacy of instrumented posterolateral fusion using ICBG for degenerated spondylolisthesis when compared with decompression only or non-instrumented posterolateral fusion [2, 12]. Prospective studies evaluating fusion rate using instrumented posterolateral fusion with ICBG showed results from 82 to 95% [2, 12]. There has been one report comparing the clinical and radiologic outcome of instrumented posterolateral lumbar fusion using local bone versus an autogenous ICBG using a retrospective comparative study [9]. Overall fusion rate was higher in the ICBG group (75%) compared with the local bone graft group (65%), but not significantly different [9]. In the current prospective randomized study, fusion rate using local bone graft and ICBG was consistent with the previous studies.

Clinical results after surgery were not significantly different between the local bone graft and ICBG groups in the current study. However, surgical time was significantly shorter for the local bone graft group compared with the ICBG group. As seen in the retrospective comparison between the two groups [9], there was no significant difference in overall clinical outcome between the two groups. However, blood loss and hospital stay were significantly less for the local graft bone group compared with