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Original research article

Is platelet rich plasma enriched bone graft superior to bone graft alone in lumbar interbody fusion

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Abstract

Aim: To study Radiological Union in Lumbar Interbody Fusion treated with Platelet Rich Plasma & Bone Graft and Bone Graft Alone.

Methodology: This is a Prospective Randomized study in Department of Orthopaedics, Kamineni Institute of Medical Sciences, Narketpally during October 2019 to September 2021.The aim of this study is to evaluate the Radiological Union in Lumbar Interbody Fusion treated with Platelet Rich Plasma & Bone Graft and Bone Graft Alone. 24 patients with 12 patients in each group, Group-A (ABG+PRP) & Group-B (ABG Alone) with single level lumbar Spondylolisthesis were treated with Posterior Lumbar Interbody Fusion with Platelet Rich Plasma and Autologous Bone Graft & Autologous Bone Graft Alone.

Results: In the present study, PRP is a Platelet Rich Plasma with high concentration of platelets used as osteoinductive with AGFs. Radiological outcome was significant in PRP group than in control group at 6months. Whereas on long term follow-up there is no significant difference in bone fusion between the PRP group and Control group.

Conclusion: This study suggests that the use of Platelet Rich Plasma along with Autologous Bone Graft promotes faster bone fusion and decreases the average duration of bone union in short term follow-up.

Keywords: PRP, lumbar fusion, autologous bone graft, radiological union

Introduction

Spinal Fusion is a frequent procedure for treating spinal degenerative disease, spinal fractures & spinal deformities. The use of Autologous Iliac Crest Bone is Gold Standard for Spinal Bone Fusion. However, many authors have reported complications such as risk of Pseudoarthrosis, infection, hematoma, fracture, wound healing problems, donor site pain. Pseudoarthrosis after spinal fusion surgery is one of the serious complications. To avoid these complications local bone, ceramics, demineralized bone matrix & bone Morphogenetic proteins have been used for lumbar fusion. Platelet Rich Plasma has recently been used for muscle, tendon & bone healing. Platelet-rich plasma (PRP) is defined as a portion of the plasma fraction of autologous blood having a platelet concentration above baseline. Platelet Rich Plasma (PRP) is blood plasma with concentrated Autologous Platelets and many Growth Factors and Cytokines such as Platelet Derived Growth Factor, Transforming Growth Factor, and Insulin like Growth Factor, Epidermal Growth Factor, Epithelial Cell Growth Factor, and Hepatocyte Growth Factor. Especially Platelet Derived Growth Factor, Transforming Growth Factor, and Insulin like Growth Factor at High Concentrations. Therefore, PRP is likely to stimulate Healing of Bone and Soft Tissue. The use of PRP along with local bone for Posterior Lumbar Interbody Fusion (PLIF) may enhance Bone Fusion. The use of PRP along with local bone for posterolateral lumbar fusion (PLF) enhanced bone fusion, and PRP combined with hydroxyapatite for posterior lumbar interbody fusion (PLIF) also enhanced bone fusion in a rat model. Some authors have reported the use PRP for PLF or anterior or posterior interbody fusion; however, the results are controversial, another major issue is the lack of controlled clinical trials to evaluate how PRP increases the rate of spinal fusion and to what extent. Furthermore, most studies have used PRP along with autologous iliac crest bone to achieve bone fusion [1].

Several centrifugation techniques have been described for the development of platelet concentrates for clinical use. Advanced ultrafiltration techniques result in concentrated plasma of up to 10 times that of whole blood: AGF (autologous growth factors). Platelets are a key component of the initial cellular response in tissue repair, which migrate to the injury site and release a variety of growth factors. The early platelet- mediated activity induces formation of a fibrin clot as well as chemotaxis of white blood cells and stem cells. Platelet degranulation and release of platelet-derived growth factor, transforming growth factor-beta, and vascular endothelial growth factor are among the signaling substances known to

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be important in bone healing. The concept of PRP application is to enhance the healing properties of bone by stimulating osteoinduction and mitogenesis. When multiple growth factors are present at the bone formation site, they may exert a synergistic effect. Numerous preclinical studies have reported positive results on the use of platelet concentrates in promoting tissue healing. Other preclinical studies have shown inhibition of osteogenic proliferation and differentiation as well as reduction of the activity of demineralized bone matrix, leading to a decrease of bone formation. Most clinical studies have been performed in the field of oral and maxillo-facial surgery. Several showed stimulation of bone formation whereas others showed no effect. The results in spinal fusion applications are limited and controversial. Both beneficial and inhibitory effects have been shown. In a recent review article, platelet gel was given a grade 2B recommendation (weak recommendation; alternative approaches likely to be better) as an enhancer of the effect of autograft for both posterior lumbar fusion and anterior lumbar inter body fusion. The grade of recommendation depended on the clarity of the risk/benefit and the methodological strength of supporting evidence [2].

The purpose of the present study is to examine the Average Time Duration of Fusion by using Platelet Rich Plasma for Bone Union after Lumbar Interbody Fusion surgery using PRP & Bone Graft and Bone Graft Alone.

Aim

To study Radiological Union in Lumbar Interbody Fusion treated with Platelet Rich Plasma & Bone Graft and Bone Graft Alone.

Objectives

To Assess the

1. Average Time Duration of Fusion.
2. Complications.

In Lumbar Interbody Fusion of Spine using Platelet Rich Plasma Enriched Bone Graft and Bone Graft Alone.

Methodology

Patients and Methods

Place of study: Kamineni Institute of Medical Sciences, Department of Orthopaedics, Narketpally.
Duration of study: October 2019 to September 2021.
Number of cases: Total number of cases is 24 with 12 cases in each group.
Type of study: Prospective Randomized Study.

Inclusion criteria

1. Patients with Single Level:
   - Lumbar Degenerative Spondylolisthesis.
   - Lumbar Lytic Spondylolisthesis.
2. Patients of Age between 20 to 60 years.

Exclusion criteria

1. Patients of Age less than 20 or more than 60 years.
2. Traumatic Spondylolisthesis.
3. Lumbar Canal Stenosis.
4. Spondylodiscitis.
5. Inflammatory Arthritis.
6. Malignancy involving Lumbar region.
7. Surgery involving more than One level.
8. Preoperative Anaemia.
9. Preoperative Thrombocytopenia.
10. Severe Osteoporosis.
11. Chronic Steroid usage.

After getting Approval from the Institutional Ethics Committee & prior Informed Consent from the Patients the Study has been conducted. A Detailed History has been Elicited, Emphasis regarding History of Onset, Duration of Symptoms, and Limitation in Daily Activity. A thorough General and Physical Examination of the Patient has been done.

- Cases has been subjected to Investigations such as:

1. Surgical profile
   i. CBP, ESR, BGT, CT, BT, PT, APTT.
   ii. RFT, LFT, CUE

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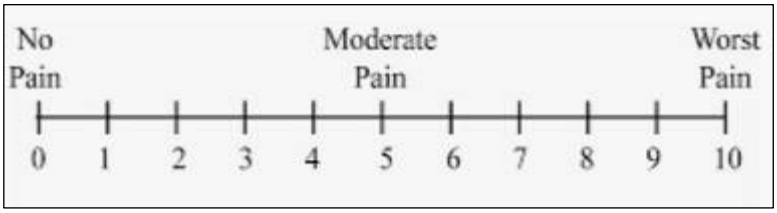
iii. HbsAg, HIV, HCV

2. X-ray of Lumbo Sacral Spine-AP, Lateral, and Dynamic Views (Lateral Flexion/Extension views).
3. MRI Lumbo Sacral Spine with Whole Spine Screening.

Patients were preoperatively assessed with Visual Analogue Scale (VAS) for back pain and leg pain.



Once the Patient is Fit for Surgery, All the Patients were Randomly Categorized into Two Groups

- **Group A:** Fusion with Autologous Bone Graft and Platelet Rich Plasma (PRP).
- **Group B:** Fusion with Autologous Bone Graft Alone.
- Radiological Fusion was evaluated after Surgery by Radiographs at 3, 6,12months and on Computed Tomography after 6,12months.

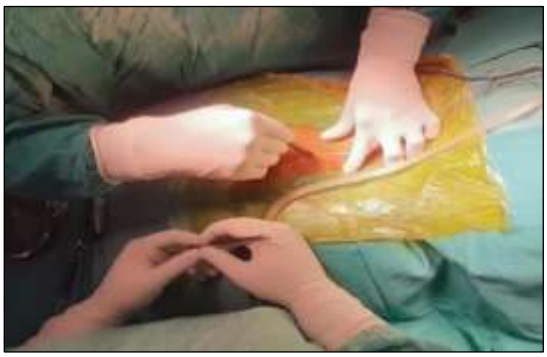
Surgical technique

Patient under General anaesthesia placed in prone position, maintaining the lumbar lordosis by position on a padded spinal frame. The Posterior Lumbar Interbody Fusion procedure begins with a posterior, midline exposure. The paraspinal muscles were elevated, exposing from the spinous processes to the tips of the transverse processes. Fixation of unstable level was done after detecting of entry point for each pedicle. The position of pedicle screws was checked by image intensifier then longitudinal rods were connected. The complete exposure for the exiting root was achieved by removing the lamina and the facet joint over the affected level and release of compression. At this stage, the medial thecal sac, exiting nerve root, and disc space were visible.

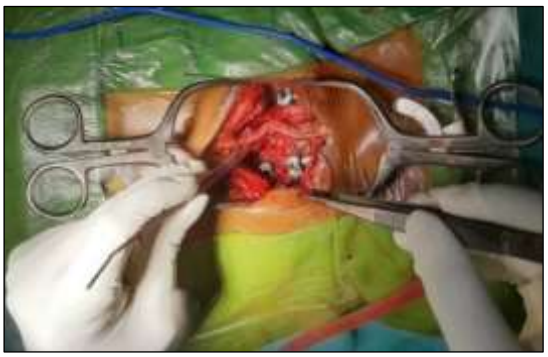
Disc space was prepared for fusion, and a nerve root retractor was often placed medially to protect the thecal sac. The disc space was incised, and a generous window was removed from the Posterolateral annulus to allow proper discectomy and the placement of Autogenous bone graft with PRP. Disc is then removed and endplates were prepared for fusion. Autologous bone graft was prepared from removed lamina and facet for interbody fusion.

- **In Group A:** At the Time of Interbody Fusion, Autologous Bone Graft along With Platelet Rich Plasma is placed.
- **In Group B:** In the same way at the Time of Interbody Fusion, Autologous Bone Graft Alone is placed.

Posterior lumbar interbody fusion



Posterior Midline Incision over Lumber Region



Pedicle Screw Fixation

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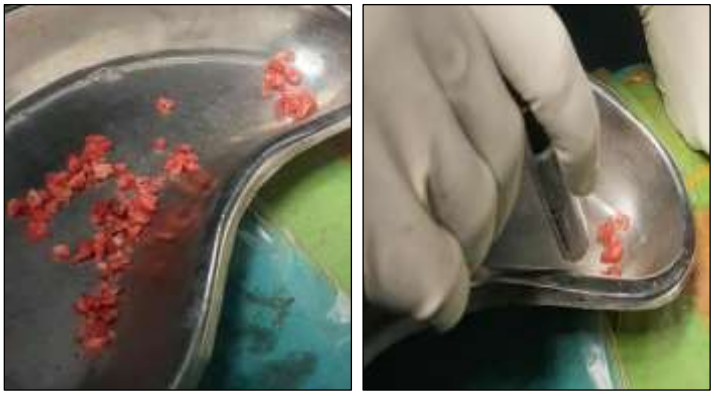
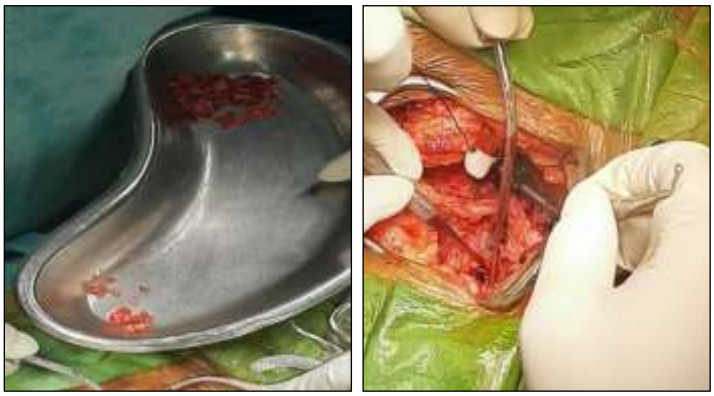


Procedure with Autologous Bone Graft & Platelet Rich Plasma



Bone Graft enriched PRP Placement

Postoperative period

Postoperatively Non-steroidal anti-inflammatory agents were avoided in all the patients and other group of analgesics were given for pain control, Patients were assessed with Visual Analogue Scale (VAS) for back pain and leg pain at early postoperative period (1week) and at 3, 6, 12 months follow-up. Patients were allowed to mobilize full weight bearing without brace postoperatively but avoid sitting for long duration for 3 weeks and lifting heavy objects for 6months. The fusion results were evaluated at 3, 6, 12 months follow-up using X-rays of Lumbosacral spine in AP/Lateral Views. Computed tomography (CT) lumbosacral spine was used to assess the fusion at 6, 12 months. On CT lumbosacral spine bone fusion was defined as bridging bone remodeling occurring between the adjacent vertebrae. Fusion was evaluated according to the criteria of Brantigan and Steffee.

Method of statistical analysis of results

- Data collected was entered in MS EXCEL and further analyzed using statistical package for social sciences (SPSS) version 19.
- Data was presented as percentages, in categories and graphs.
- Statistical significance was assessed using Wilcoxon Signed Ranks Test (WSRT), Paired t-test and $p<0.05$ was considered as statistically significant.

Observation and results of the study

Table 1: Patient Age (n=24)

Patient Age (yrs)	Group-A (ABG+PRP) n=12	Group-B (ABG Alone) n=12
30-39	2	1
40-49	6	8
50-60	4	3
Total	12	12

It was observed that majority no. of patients were in the age group of 40-49 years [14 patients, 58.33%] followed by 50-60 years [7 patients, 29.17%], 30-39 years [3 patients, 12.5%].

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Table 2: Patient Gender (n=24)

Patient Gender	Group-A (ABG+PRP) n=12	Group-B (ABG Alone) n=12
Male	5	4
Female	7	8
Total	12	12

It was observed that Female patient's predominance was more than the Male patients.

Table 3: Level of Surgery (n=24)

Level of Surgery	Group-A (ABG+PRP) n=12	Group-B (ABG Alone) n=12
L4-L5	9	10
L5-S1	3	2
Total	12	12

Although Spondylolisthesis most commonly occurs at the L5-S1 level, in our study it was observed that most common level of presentation was L4-L5 level, 19 patients presented with Spondylolisthesis at L4-L5 level [79.16%] followed by L5-S1 level [5 patients, 20.84%].

Table 4: Grade of Spondylolisthesis (n=24)

Grade of Slip	Group-A (ABG+PRP) n=12	Group-B (ABG Alone) n=12
Grade 1	3	3
Grade 2	7	8
Grade 3	2	1
Total	12	12

It was observed that more no. of cases was of spondylolisthesis Grade II [15patients, 62.5%] followed by Grade I [6 patients, 25%] and Grade III [3 patients, 12.5%]. No cases were presented of Grade IV spondylolisthesis.

Table 5: Mean Back Pain Visual Analogue Scale (VAS) over 12months Follow up (*n*=24)

Mean Back Pain Visual Analogue Scale (VAS)	Group-A (ABG+PRP) n=12	Group-B (ABG Alone) n=12	p-value
Preoperatively	7.08±0.66	7±0.73	0.78 (NS)
Early Postoperatively (Initial 72hrs Postop)	8.08±0.66	4.25±0.86	<0.001 (S)
3months Postoperative	1.5±0.52	1.83±0.71	0.20 (NS)
At 6,12months there was no back pain in both the groups			
S=Significant; NS=non-Significant			

It was observed that patient had severe back pain in early postoperative period (initial 72hrs postop) in PRP group than in control group. There was significant difference in Mean Back Pain Visual Analogue Scale (VAS) at early postoperative period (Initial 72hrs Postop) in PRP group than in control group (p-value=<0.01 (Significant), whereas on follow-up at 3,6,12months Visual Analogue Scale (VAS) Mean Back Pain no significant difference was seen between the two groups.

Table 6: Mean Leg Pain Visual Analogue Scale (VAS) over 12 months Follow up (*n*=24)

Mean Leg Pain Visual Analogue Scale (VAS)	Group-A (ABG+PRP) n=12	Group-B (ABG Alone) n=12	p-value
Preoperatively	7.5±0.79	7.3±0.98	0.58
Early Postoperatively (Initial 72 hrs Postop)	2.6±0.65	2.5±0.67	0.71
3 months Postoperative	0.25±0.45	0.3±0.49	0.79
At 6,12months there was no back pain in both the groups			

It was observed that pre-op & post-op there was no significant difference noted in both the groups for Mean Leg Pain Visual Analogue Scale (VAS).

Table 7: Radiological Fusion Average Duration on Follow up (*n*=24)

Signs of Fusion Present on X-rays			
Follow up	Group-A (ABG+PRP) n=12	Group-B (ABG Alone) n=12	p-value
6months	9	3	0.014 (S)
12months	12	9	0.083 (NS)

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S=Significant; NS=Non-Significant

It was observed that the average duration of radiological fusion on short-term follow- up at 6months was significant between the PRP group than in the control group (p-value=0.014), whereas on long term follow-up at 12months no significance was seen (p-value=0.083).

- All the 24 patients of both the groups were evaluated with Visual Analogue Scale (VAS) for back pain and leg pain at preoperative period and early Postoperative period and at 3, 6, and 12months postoperatively.
- The mean back pain Visual Analogue Scale (VAS) in PRP Group (Group-A), was 7.08 preoperatively and early postoperative period it was 8.08 and at 3months it was 1.5, whereas in Non-PRP Group (Group-B) mean back pain Visual Analogue Scale (VAS) preoperatively was 7 and early postoperative period it was 4.25 and at 3months it was 1.83. It was observed that there was significant difference in Mean Back Pain Visual Analogue Scale (VAS) at early postoperative period (Initial 72hrs Postop) in PRP group than in control group (p-value=<0.01), whereas on follow up at 3,6,12months Visual Analogue Scale (VAS) Mean Back Pain no significant difference was seen.
- The mean Leg pain Visual Analogue Scale (VAS) in PRP Group (Group-A), was 7.5 preoperatively and early postoperative period it was 2.6 and 0.25 at 3months, and in Non-PRP Group (Group-B) mean Leg pain Visual Analogue Scale (VAS) preoperatively was 7.3 and early postoperative period it was 2.5 and 0.3 at 3months. No significant difference noted in both the groups Radiological Outcome was evaluated on X-rays at 3, 6, and 12months and on Computed Tomography at 6, 12months.
- Radiological Fusion was done according to Brantigan and Steffee criteria, no sign of fusions observed in both the groups at 3months. In PRP group at 6months there was signs of fusion grade-IV to V in 9 of 12 cases, whereas in control group 3 of 12 cases fusion was observed. And at 12months 12 of 12 cases fusion was seen in PRP group, and 9 of 12 cases in control group.

Discussion

Age distribution

In the present Study more no. of the patients was present in the age group of 40- 49 years (14 patients, 58.33%). Mean age in the present study is 46.16 years, which is similar with mean age of Boktor *et al*. (2019) [2], Jenis *et al*. (2006) [3] and Hee *et al*. (2004) [4] study. In the study of Kubota *et al*. mean age of presentation was 61.35.

In the present study Female patients were affected more than the Male patients (Female 15, Male 9). Similarly in the study of Boktor *et al*. (2019) [2], & Hee *et al*. (2003) [4]. Female patients were more affected than the male patients. Whereas in the study of Kubota *et al*. (2018) [1] equal distribution seen between male and female patients. This shows there is a female predominance in the present study which is in comparison with studies previously done by Boktor *et al*. (2019) [2] and Hee *et al*. (2003) [4].

Level of spondylolisthesis

In the present study most commonly affected level of spine with Spondylolisthesis was L4-L5 (19 patients, 79.16%) followed by L5-S1 (5 patients. 20.84%). According to study conducted by Boktor *et al*. (2019) on 40 patients most common level affected with spondylolisthesis is L4-L5 (21 patients, 52.5%) followed by L5-S1 (7 patients, 35%) & L3-L4 (4 patients, 10%). Similarly in a study conducted by Kubota *et al*. (2018) on 20 patients suffering with spondylolisthesis that most common level affected is L4-L5 (12 patients, 60%) followed by L5-S1 (7 patients, 35%). In another study done by Sys *et al*. (2011) on 40 patients most commonly affected level of Spondylolisthesis was L5-S1 (30 patients, 75%) followed by L4-L5 (7 patients, 17.5%) & L3-L4 (1 patient, 4%).

Grade of spondylolisthesis

In the present study, Grading was done according to Meyerding Classification, majority of the Spondylolisthesis were Grade II [15patients, 62.5%] and remaining patients belongs to Grade I [6 patients, 25%] and Grade III [3 patients, 12.5%]. No cases were presented with Grade IV in this study. According to study conducted by Boktor *et al*. (2019) [2] on 40 patients with spondylolisthesis 17 belongs to Grade I and 23 belong to Grade II, no cases were studied on Grade III and in another study done by Jenis *et al*. (2006) on 37 patients only Grade I cases were studied.

Fixation of no. of Spondylolisthesis Level & Surgical technique

In the present study Twenty four patients of grade I/II/III spondylolisthesis were treated for with single level PLIF (Posterior Lumbar Interbody Fusion) with pedicle screw fixation. All the cases were randomly divided into two equal groups of Group A (ABG+PRP) and Group B (ABG Alone). In the similar study conducted by Boktor *et al*. (2019) on 40 patients single level PLIF with pedicle screw fixation done with ABG+PRF & ABG Alone. In the study of Kubota *et al*. (2018) twenty patients underwent single-level TLIF surgery because of L4 spondylolisthesis. An interbody fusion cage and

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local bone were used in nine patients (control group) and an interbody fusion cage, local bone, and PRP were used in 11 patients (PRP group). In the study done by Jenis *et al*. (2006) thirty seven patients were assigned to standard anterior-posterior interbody fusion L2-S1 (single or two-level) using iliac crest bone graft (autograft group: 22 patients with 32 levels operated) or allograft combined with autogenous growth factors (AGF group: 15 patients with 25 levels operated). In the study done by Hee *et al*. (2003) thirteen patients received one-level fusions and ten received two-level fusions by TLIF with pedicle screw fixation and ABG+PRP and ABG Alone.

Type of autologous growth factors & source

In the present study type of autologous growth factor was Platelet Rich Plasma (PRP). Similar autologous growth factors were used in Kubota *et al*. (2018), Sys *et al*. (2011) [5], Jenis *et al*. (2006) studies. In the study of Boktor *et al*. (2019) the author used autologous Platelet Rich Fibrin (PRF).

Mean Back pain Visual Analogue Scale (VAS)

In the present study it was observed that there was significant difference in Mean Back Pain Visual Analogue Scale (VAS) at early postoperative period (Initial 72hrs Postop) in PRP group than in control group (p-value=<0.01 (Significant), patient had severe back in the early postoperative period (initial 72hrs) this could also be attributed due to avoidance of non-steroidal anti-inflammatory drugs in the first 5days of immediate postoperative period. Although postoperatively during follow up mean back pain statistically proven to be non-significant. According to studies done by Boktor *et al*. (2019) Jenis *et al*. (2006) mean back pain visual analogue scale (VAS) was non-significant during their study.

Mean Leg pain Visual Analogue Scale (VAS)

In the present study mean leg pain visual analogue scale was non-significant. Similarly in the study conducted by Boktor *et al*. (2019) mean leg pain visual analogue scale there was no significance seen.

Radiological Fusion Average Duration on Follow up (*n*=24)

In the present study Radiological Fusion was done according to Brantigan and Steffee criteria, no sign of fusions observed in both the groups at 3months. In PRP group at 6months there was signs of fusion grade-IV to V in 9 of 12 cases, whereas in control group 3 of 12 cases fusion was observed. And at 12months 12 of 12 cases fusion was seen in PRP group, and 9 of 12 cases in control group. It was observed that the average duration of radiological fusion on short-term follow-up at 6months was significant between the PRP group than in the control group (p-value=0.014) significant, whereas on long term follow-up at 12months no significance was seen (p-value=0.083). In a study conducted by Boktor *et al*. (2019) fusion was present in 15 of 20 cases in the PRF group (75%) by the 6month and in 19 of 20 cases (95%) by 1 year reaching 100% at 2 years. Whereas in the control group, fusion was present in 12 of 20 cases (60%) by the 6month and in 13 of 20 cases (65%) by 1 year and 18 of 20 cases by 2 years 90% (p<0.05). According to study conducted by Kubota *et al*. (2018) on 20 patients bone union rate was significantly superior in the PRP group than in the control group (91% and 77%, respectively; p=0.035), whereas the average duration of bone union was not significantly different between the groups, (p=0.131). In a study conducted by Jenis *et al*. (2006) based on computed tomography at 6months fusion was present in 56% of patient of both autograft and AGF groups (p=NS). The 12 and 24month radiographic results confirmed an 85% arthrodesis rate for the autograft patients, whereas the AGF patients had an 89% fusion rate (p=NS).

Complications

In the present study it was observed that there were no intraoperative and postoperative complications. In a study done by Boktor *et al*. (2019) complications were seen in7 patients i.e., 2 patients with superficial infections & 1 Patient with Failed Screw (misplaced) in ABG+PRF Group and 3 patients with superficial infections & 1 Patient with Failed Screw (misplaced) in ABG Alone Group. In 2011 Sys *et al*. conducted a study on 40 patients, no complications or PRP related adverse effect was reported. In a study done by Jenis *et al*. (2006) 1 patient had pseudoarthrosis in iliac crest bone graft + PRP group requiring revision surgery.

Spinal fusion

Spinal fusion is one of the most commonly performed procedures for the treatment of spinal instability caused by a multitude of pathologies. However, the failure rate of bony union is around 10% to 40% in patients requiring single-level fusions, and even higher with multiple-level fusions [6]. The most common clinical approach for preventing nonunion has been the use of internal fixation, but pseudoarthrosis still occurs in 10% to 15% of patients [7]. Although autologous iliac crest bone grafts have been considered the gold standard for lumbar interbody fusion, the complications, including scarring, fracture, herniation, pelvic instability, sensory loss and infection, associated with bone harvest are at risk [8]. The use of varieties of other graft materials, such as local bone, bone-bank bone, demineralized bone matrix and

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bone graft extenders, have been advocated [9]. In the past decade, great effort has been done to enhancing the biologic process of spinal fusion.

Platelet concentrates in spine fusion gained increasing popularity among spine surgeons. They avoid morbidity of bone harvest and promise good union rates without additional device-related adverse events [10]. Platelets concentrates, known as a rich source of growth factors [platelet-derived growth factor, transforming growth factor, insulin-like growth factor, epidermal growth factor, vascular endothelial growth factor and fibroblast growth factor], have recently been used for muscle, tendon, and bone healing [11].

Autologous PRP can be obtained directly in the operating theatre. This method is faster and immediately available to the surgeon. PRP is an autologous product and is completely safe for the patient. Moreover, it promotes leukocyte chemotaxis and has antibacterial effect and also increases tissue repair and remodeling [12].

The enhancement of healing by the placement of a supraphysiologic concentration of autologous platelets at the site of surgery is supported by basic science studies [13].

Platelet degranulation releases several growth factors which promote chemotaxis and proliferation of mesenchymal stem cells and osteoblasts and enhance bone healing. It has been suggested that at least five times the amount of platelets/mm3 in periphery blood is necessary in the autologous platelet concentrate to be effective. It is also known that 95% of the factors are released within the first hour, although platelets synthesize and secrete new factors during several days once the autologous platelet concentrate has been installed over the tissue to heal.

Limitations of the study

- Less sample size.
- Relatively less duration of follow up.

Conclusion

This study shows that the use of Platelet Rich Plasma along with Autologous Bone Graft promotes faster bone fusion and decreases the average duration of bone union in short‐term follow‐up. Radiological outcome was significant in PRP group than in control group at 6months. Whereas on long term follow-up there is no significant difference in bone fusion between the PRP group and Control group. There was significant difference in lower back pain at early postoperative period (initial 72hrs) in PRP group than in control group. Patient had severe back pain in PRP group than in control group at early postoperative period (initial 72hrs). No significance seen in leg pain during follow-up in both the groups.

This study concludes that that use of Platelet Rich Plasma along with Autologous Bone Graft accelerates bone fusion during short‐term follow‐up and enhances Bone Fusion.

Conflict of Interest: None.

Funding Support: Nil.

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