Reviewer #1:
Scientific Quality: Grade D (Fair)
Language Quality: Grade B (Minor language polishing)
Conclusion: Major revision
Specific Comments to Authors: Thank you for providing a chance to review your manuscript. Overall, this is an interesting study that aimed to investigate whether additional treatment with PRP and HA after arthroscopy debridement provides better outcomes than arthroscopy debridement alone. This retrospective cohort study found that Arthroscopy debridement with PRP showed a significantly lower WOMAC pain score than arthroscopic debridement therapy 5 mo after the procedure, but there was no significant difference in WOMAC score among the three treatments. Neither treatment was superior in the ability to improve WOMAC score or knee OA symptoms. However, arthroscopy debridement with PRP was more promising than arthroscopy debridement in reducing pain. Overall, the paper is well-written, but major revisions are still needed:

1. According to guidelines, KL grade 4 is an indication for joint replacement. Why choose KL 3 and 4 in this study rather than KL 2 and 3?

*** We agree that KL grade 4 is an indication for joint replacement. In the advanced stage of knee OA, joint replacement is the recommended management; but among those candidates only 15%-33% are willing to submit themselves to the extensive surgery. Thus, an alternative treatment option is needed to overcome this, in which we propose adjunctive PRP / HA after arthroscopy debridement.*

This is stated in the revised manuscript page 2 (abstract) and page 4 (introduction)

2. There are too few evaluation indicators. It is recommended to use an imaging examination like MRI. And are there any adverse reactions?

*** In Indonesia, not every hospital has MRI.*

"We did not use magnetic resonance imaging (MRI) assessment as outcome measurement since this imaging modality was not in routine use in our hospitals during the study period." (revised manuscript page 6)

*** There were no adverse reactions noted in the medical record data for any of the total 21 patients. (revised manuscript page 5)*

3. In the abstract, Sub-items such as WOMAC stiff score of WOMAC total score need to be introduced separately.

*** Thank you for the inputs. We have revised and separately introduced sub-WOMAC scores. (revised manuscript page 2)*

4. **Are core statistics like p-values and t-values given specific values in the abstract and table?**

** *We have added t-values in Table 2 as followed*

Table 2 Paired *t*-test analysis of Western Ontario and McMaster Universities Osteoarthritis Index scores and sub-scores

					Paired *t*-test			
					Baseline *vs* 3 mo		Baseline *vs* 5 mo	
Treatment	**Outcome**	**Baseline**	**3 mo**	**5 mo**	***t* value**	***P* value**	***t* value**	***P* value**
Arthroscopic debridement	WOMAC score	49.43 ± 10.33	28.57 ± 9.09	18.57 ± 7.12	5.143	0.002	8.712	0.000
	Pain score	12.43 ± 2.76	6.00 ± 2.65	4.14 ± 3.02	5.391	0.002	17.488	0.000
	Stiffness score	4.57 ± 2.15	3.00 ± 0.82	2.14 ± 2.12	2.008	0.091	2.232	0.067
	Function score	32.43 ± 8.89	19.57 ± 7.30	12.29 ± 3.64	3.658	0.011	6.134	0.001
Arthroscopic debridement + HA	WOMAC score	54.43 ± 14.55	24.86 ± 12.09	14.86 ± 5.58	4.975	0.003	7.254	0.000
	Pain score	12.57 ± 4.50	4.43 ± 2.44	2.14 ± 0.70	5.943	0.001	6.177	0.001
	Stiffness score	4.57 ± 2.82	2.43 ± 1.62	0.86 ± 1.21	1.605	0.160	2.931	0.026
	Function score	37.29 ± 9.66	18.00 ± 8.87	11.86 ± 4.22	4.559	0.004	7.0029	0.000
Arthroscopic debridement + PRP	WOMAC score	49.86 ± 7.22	19.71 ± 5.74	15.00 ± 8.45	7.827	0.000	8.105	0.000
	Pain score	13.14 ± 2.34	4.14 ± 1.86	1.71 ± 0.95	7.937	0.000	12.060	0.000
	Stiffness score	5.43 ± 3.16	1.71 ± 1.38	0.86 ± 1.07	3.176	0.019	3.600	0.011
	Function score	31.29 ± 6.26	13.86 ± 4.10	12.43 ± 6.80	6.397	0.001	5.781	0.001

HA: Hyaluronic acid; PRP: Platelet-rich plasma; WOMAC: Western Ontario and McMaster Universities Osteoarthritis Index.

5. The introduction section is not sufficient, and the authors should Briefly introduce the application of PRP and HA in the treatment of knee osteoarthritis.

** *Thank you for the inputs. We added this in the revised manuscript page 4.*

"PRP is the blood's plasma component that has been prepared with a high concentration of platelets, which express the cytokines and growth factors to stimulate cartilage repair and inflammation decrease[6,7,9]. In knee OA, PRP has been shown to improve both the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) score and the 36-item Short Form survey (commonly known as the SF-36) score[10,11]. Intraarticular HA injection has shown the benefits of chondroprotective effect, pain decrease, inflammatory response modulation and endogenous HA synthesis increase, and its wide application has demonstrated success in decreasing knee OA symptoms[12–15]."

6. What is the treatment process for PRP or HA? Whether the injection is during the operation or how long after the surgery？ How many times PRP or HA are injected, the dose of the injection is not clear.

** *We explained this process in Material and Method section, page 5.*

"As a minimally invasive procedure, arthroscopic debridement is performed by inserting arthroscopes through small incisions, followed by debridement and irrigation. Debridement of necrotic chondral tissue is carried out to remove it from the cartilage, with subsequent saline-solution washing by irrigation[17]. For our patients, either PRP or HA was administered at 1 wk postsurgically via intraarticular injection to the patelofemoral joint under aseptic conditions. The HA treatment consisted of 3 mL Hyajoint-plus® (Macopharma, Tourcoing, France) at 20 mg/mL, while the PRP preparation protocol consisted of RegenKit® (Regen Lab, New York, NY, United States) administered as 5 mL."

7. What is the specific definition of arthroscopy debridement? Please clarify,

*** We clarify this in Material and Method section page 5.*

"As a minimally invasive procedure, arthroscopic debridement is performed by inserting arthroscopes through small incisions, followed by debridement and irrigation. Debridement of necrotic chondral tissue is carried out to remove it from the cartilage, with subsequent saline-solution washing by irrigation[17]."

8. Other injuries and medical conditions, such as meniscus tear, were not described and could potentially become confounding factors. Whether to consider covariance analysis?

*** Any meniscus tear found during surgery was recorded and noted for its potential to serve as a confounding factor.*

Forty-seven percent of the patients in our study had meniscal tear discovered during the surgery. Even though a meniscal tear can contribute to knee OA symptoms, the occurrence of such was comparable at baseline in our patients, thus we did not do further statistical analysis or adjustment. (revised manuscript page 11 and Table 1 page 22)

9. KL grade and number of each group should be listed in Table 1.

Table 1 Patient characteristics

Characteristic		Mean	Arthroscopy	Arthroscopy + HA	Arthroscopy + PRP	*P* value
Patients		7	7	7	7	N/A
Age in yr		59.29 ± 6.61	58.29 ± 6.75	57.29 ± 7.16	62.29 ±5.71	0.34
Sex	Male	8 (38.1%)	3 (42.9%)	2 (28.6%)	3 (42.9%)	0.82
	Female	13 (61.9%)	4 (57.2%)	5 (71.4%)	4 (57.2%)	
Affected knee	Right	14 (66.7%)	5 (71.4%)	6 (85.7%)	3 (42.9%)	0.22
	Left	7 (33.3%)	2 (28.6%)	1 (14.3%)	4 (57.2%)	
KL grade	3	15 (71.4%)	7 (100%)	2 (28.6%)	6 (85.7%)	0.01
	4	6 (28.6%)	0	5 (71.4%)	1 (14.3%)	
Meniscus tear	Yes	10 (47.6%)	2 (28.6%)	5 (71.4%)	3 (42.9%)	0.25
	No	11 (52.4%)	5 (71.4%)	2 (28.6%)	4 (57.1%)	

Data are presented as *n* (%) or mean ± standard deviation. HA: Hyaluronic acid; KL: Kellgren-Lawrence; N/A: Not applicable; PRP: Platelet-rich plasma.

** Table 1 (page 22)

** Discussion page 11

"According to Rajpoot et al[36], KL grade is positively correlated with WOMAC score, but to the best of our knowledge there has been no study specifically comparing WOMAC score in KL grade 3 and 4. In our study, the number of patients with KL grade 3 knee OA was significantly higher than those with KL grade 4, but we found no statistically significant difference either in WOMAC score or WOMAC sub-scores at baseline."

10. The discussion section is relatively redundant, and the logic is not clear. It is recommended to delete irrelevant content and clarify the focus of the discussion.

*** Thank you for the inputs, we have rewrote the discussion section. (revised manuscript page 7-11)*

11. This study has a small sample size. How the sample size is calculated?

*** The study sample calculation was stated in the revised manuscript page 5*

" The study sample size was calculated according to a false positive rate of 5% (a = 0.5) and 80% power (β = 0.2), and on a predicted difference 56.87 point on mean WOMAC score changes (standard deviation

37.26)[16]. Accordingly, for multiple-group comparison, a minimum of 6 patients per group were determined to be required, and we included 7 patients per group."

12. Since the follow-up period is short, future research with a prospective cohort and a longer follow-up period is needed.

*** We've added suggestion on the revised manuscript page 11*

" We suggest a prospective cohort and a longer follow-up period for future research and including imaging evaluation, such as with MRI."

13. English expression and grammars need to be checked. Such as "To investigate whether additional treatment with PRP and HA after arthroscopy debridement provides better outcomes then arthroscopy debridement alone."

*** Thank you for your inputs, we've submitted the revised manuscript file to one of BPG English services company for better English expression and grammars.*

Reviewer #2:
Scientific Quality: Grade B (Very good)
Language Quality: Grade B (Minor language polishing)
Conclusion: Minor revision
Specific Comments to Authors: Please make the following changes:

1. Rewrite the title in light of the purpose of the paper, keeping it under 20 words.

** The revised title:

Retrospective Cohort Study

Effect of adjunctive platelet-rich plasma and hyaluronic acid injection after arthroscopy debridement in Kellgren-Lawrence grade 3 and 4 knee osteoarthritis

2. Rewrite the study abstract to be more concise.

*** We have rewrote the study abstract to be more concise. It was on page 2 and 3 of the revised manuscript file.*

3. Highlight only the most important findings in the study abstract's results section.

*** We have rewrote the study abstract's result section. It was on page 2 and 3 of the revised manuscript file.*

4. Updating the introduction's references with recent references and clarifying the purpose of the study in the final paragraph of the introduction.

*** Introduction references have been updated and the purpose of the study was stated in page 4 of the revised manuscript.*

"In this study, we aimed to investigate whether adjunctive treatment with PRP or HA after arthroscopy debridement was able to provide better outcomes then arthroscopy debridement alone."

5. Expand the materails and method section and include the references cited in the study protocol.

*** We have put details on the material and method section, including the treatment procedure and sample calculation along with the references (page 4-6)*

6. To avoid errors, pay close attention to the flow of information in the results section.

*** The result section have been rewritten on the revised manuscript page 6-7.*

7. The discussion section is written in a unique style.

*** The discussion section have been rewritten on the revised manuscript page 7-11.*

8. Rewrite the conclusion section of the study.

*** The conclusion section have been rewritten on the revised manuscript page 11.*

"Adjunctive PRP after arthroscopy debridement gave better improvement in pain symptom compared to arthroscopy debridement alone. However, neither treatment was superior regarding the ability to improve WOMAC score and other knee OA symptoms."

9. Avoiding linguistic or typographical errors after incorporating the reviewers' proposed amendments.

*** Thank you for your inputs, we've submitted the revised manuscript file to one of BPG English services company for linguistic supports.*

Reviewer #3:
Scientific Quality: Grade C (Good)
Language Quality: Grade A (Priority publishing)
Conclusion: Minor revision
Specific Comments to Authors: The efficacy of PRP and HA in the management of late stage KOA (III,IV stage) remains controversial, this retrospective cohort study reported, for the first time, that PRP and HA after arthroscopy debridement was not superior to arthroscopy debridement alone in relieving osteoarthritis symptoms, however, PRP showed some advantages in pain relieving. However, there are several limitations:

1. As the author said, the number is too small, there are 7 cases in each group. According to the paper, 21 cases were retrospectively collected, how to guarantee 7 cases in each group?

*** The number of patients in each group was stated in Table 1 (revised manuscript page 22)*

Table 1 Patient characteristics

Characteristic		Mean	Arthroscopy	Arthroscopy + HA	Arthroscopy + PRP	*P* value
Patients		7	7	7	7	N/A
Age in yr		59.29 ± 6.61	58.29 ± 6.75	57.29 ± 7.16	62.29 ±5.71	0.34
Sex	Male	8 (38.1%)	3 (42.9%)	2 (28.6%)	3 (42.9%)	0.82
	Female	13 (61.9%)	4 (57.2%)	5 (71.4%)	4 (57.2%)	
Affected knee	Right	14 (66.7%)	5 (71.4%)	6 (85.7%)	3 (42.9%)	0.22
	Left	7 (33.3%)	2 (28.6%)	1 (14.3%)	4 (57.2%)	
KL grade	3	15 (71.4%)	7 (100%)	2 (28.6%)	6 (85.7%)	0.01
	4	6 (28.6%)	0	5 (71.4%)	1 (14.3%)	
Meniscus tear	Yes	10 (47.6%)	2 (28.6%)	5 (71.4%)	3 (42.9%)	0.25
	No	11 (52.4%)	5 (71.4%)	2 (28.6%)	4 (57.1%)	

Data are presented as *n* (%) or mean ± standard deviation. HA: Hyaluronic acid; KL: Kellgren-Lawrence; N/A: Not applicable; PRP: Platelet-rich plasma.

*** The study sample calculation was stated in the revised manuscript page 5*

" The study sample size was calculated according to a false positive rate of 5% (a = 0.5) and 80% power (β = 0.2), and on a predicted difference 56.87 point on mean WOMAC score changes (standard deviation 37.26)[16]. Accordingly, for multiple-group comparison, a minimum of 6 patients per group were determined to be required, and we included 7 patients per group."

2. In third paragraph of page 5, other injuries and medical conditions, such as meniscus tear, were not described and could potentially become confounding factors, this should be discussed before the conclusion.

*** We have added in discussion section (page 11 of the revised manuscript).*

"Lesions in knee OA not only affect the cartilage but also other structures, including the meniscus. A meniscal tear can contribute to progression of knee OA by its negative effects on load distribution, shock absorption, and stability of the knee joint. Individuals with meniscal tear frequently present with knee OA, which contributes to symptoms of the former. Reportedly, among KL grade 2-4 knee OA patients, 63% have meniscal tear[37,38]. Forty-seven percent of the patients in our study had meniscal tear discovered during the surgery. Even though a meniscal tear can contribute to knee OA symptoms, the occurrence of such was comparable at baseline in our patients, thus we did not do further statistical analysis or adjustment."

3. Table 2, the baseline, 3 month, 5 month WOMAC, pain, stiff, and physical function scores should be used instead of P value. From the Fig 1-4, we do not know if the WOMAC, pain, stiffness, and physical function baseline scores are comparable.

*** We have made revision on the Tables. WOMAC score and sub-scores were comparable at baseline (Table 3)*

Table 3 Analysis of Variance and Least Significance Difference post hoc test for Western Ontario and McMaster Universities Osteoarthritis Index score and sub-scores

Score	Period	Arthroscopic debridement	Arthroscopic debridement + HA	Arthroscopic debridement + PRP	ANOVA *P* value	LSD post hoc test *P* value		
						I *vs* II	I *vs* III	II *vs* III
WOMAC score	Baseline	49.43 ± 10.33	54.43 ± 14.55	49.86 ± 7.22	0.65	0.41	0.94	0.45
	3 mo	28.57 ± 9.09	24.86 ± 12.09	19.71 ± 5.74	0.23	0.47	0.09	0.32
	5 mo	18.57 ± 7.12	14.86 ± 5.58	15.00 ± 8.45	0.56	0.34	0.36	0.97
Pain score	Baseline	12.43 ± 2.76	12.57 ± 4.50	13.14 ± 2.34	0.91	0.94	0.69	0.75
	3 mo	6.00 ± 2.65	4.43 ± 2.44	4.14 ± 1.86	0.30	0.23	0.16	0.82
	5 mo	4.14 ± 3.02	2.14 ± 0.70	1.71 ± 0.95	0.06	0.06	0.03	0.67
Stiffness score	Baseline	4.57 ± 2.15	4.57 ± 2.82	5.43 ± 3.16	0.80	1.00	0.57	0.57
	3 mo	3.00 ± 0.82	2.43 ± 1.62	1.71 ± 1.38	0.22	0.43	0.08	0.32
	5 mo	2.14 ± 2.12	0.86 ± 1.21	0.86 ± 1.07	0.22	0.14	0.14	1.00
Function score	Baseline	32.43 ± 8.89	37.29 ± 9.66	31.29 ± 6.26	0.39	0.29	0.80	0.20
	3 mo	19.57 ± 7.30	18.00 ± 8.87	13.86 ± 4.10	0.32	0.68	0.15	0.29
	5 mo	12.29 ± 3.64	11.86 ± 4.22	12.43 ± 6.80	0.98	0.83	0.96	0.84

HA: Hyaluronic acid; PRP: Platelet-rich plasma; WOMAC: Western Ontario and McMaster Universities Osteoarthritis Index. I: Arthroscopic debridement; II: Arthroscopic debridement + HA; III: Arthroscopic debridement + PRP.