

REVIEWER'S REPORT

Manuscript No.: IJAR-58687

Title: Diffuse-Type Tenosynovial Giant Cell Tumor (Pigmented Villonodular Synovitis) of the Knee: A Case Report.

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after major revision ...YES.....

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality			☐	
Techn. Quality			☐	
Clarity		☐		
Significance			☐	

Reviewer's ID: JPR-094

Detailed Reviewer's Report

Reviewer's Report

Manuscript Title

Overall Assessment

This manuscript presents a case of diffuse-type tenosynovial giant cell tumor (TGCT) of the knee in a 25-year-old man with a four-year history of mechanical knee pain. MRI demonstrated diffuse bicompartamental synovial involvement, and the diagnosis was confirmed histopathologically following total open synovectomy. The manuscript addresses a clinically relevant but uncommon condition and provides useful clinical, radiological, surgical, and pathological information. However, the overall novelty is limited because diffuse-type TGCT/PVNS of the knee and open synovectomy are

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already well documented. The very short three-month follow-up is also a significant limitation for a disease known for recurrence.

1. Strengths of the Manuscript**1. **Clinically relevant condition:****

TGCT is an uncommon but important cause of chronic monoarticular knee symptoms, particularly in young adults. The manuscript appropriately emphasizes the possibility of diagnostic delay.

2. **Clear clinical presentation:**

The patient history, physical examination, duration of symptoms, range-of-motion limitation, and quadriceps amyotrophy are adequately described.

3. **Appropriate diagnostic pathway:**

The manuscript appropriately describes normal radiographs and inflammatory markers followed by MRI, which is the principal imaging modality for assessing TGCT.

4. **MRI findings are reasonably detailed:**

The description of diffuse synovial hypertrophy, bicompartamental involvement, heterogeneous signal, and hemosiderin-related low-signal areas is useful.

5. **Histopathological confirmation:**

The presence of villonodular hyperplasia, hemosiderin deposits, multinucleated giant cells, and xanthomatous/foam cells supports the diagnosis.

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6. ****Surgical management is clearly described:****

The authors provide useful information regarding the decision to perform open total synovectomy and the intraoperative appearance of the synovium.

7. ****Transparency regarding limitations:****

The authors appropriately acknowledge that three months of follow-up is insufficient to assess long-term recurrence.

8. ****Patient consent and declarations are provided:****

Written informed consent, conflict-of-interest declaration, and authorship contributions are appropriately included.

2. Weaknesses of the Manuscript

Major Weaknesses

1. ****Limited novelty****

Diffuse-type TGCT of the knee is already extensively described in the literature. Open synovectomy is also an established treatment. Therefore, the manuscript does not currently demonstrate a sufficiently strong novel aspect.

****Recommendation:**** The authors should clearly explain what makes this particular case worthy of publication compared with previously reported cases and series.

REVIEWER'S REPORT**2. **Very short follow-up****

The reported follow-up is only ****three months****. Since diffuse TGCT has a substantial risk of recurrence, three months is inadequate for evaluating treatment success.

****Recommendation:**** Longer clinical and preferably MRI follow-up should be provided if available. If longer follow-up is unavailable, the manuscript should explicitly present the three-month result only as an early postoperative outcome and avoid implying durable disease control.

3. **No postoperative MRI**

The absence of postoperative MRI means that the claim of complete disease clearance is based mainly on intraoperative/macroscopic assessment and clinical findings.

****Recommendation:**** A postoperative MRI would substantially strengthen the report by documenting residual or recurrent synovial disease.

4. **Functional outcome is insufficiently assessed**

The manuscript reports improvement in pain and weight-bearing but does not provide a validated functional outcome measure.

****Recommendation:**** Include an appropriate score such as Lysholm, KOOS, Oxford Knee Score, or another validated knee functional assessment, if available.

REVIEWER'S REPORT**5. **Treatment rationale requires stronger justification****

The decision to perform open total synovectomy without adjuvant treatment is important in this case, but the rationale should be discussed more critically. The manuscript should explain why adjuvant radiotherapy/radiosynoviorthesis or systemic CSF1R-targeted therapy was not considered.

6. **Some statements regarding recurrence and treatment require careful referencing**

Statements regarding recurrence rates, superiority of open versus arthroscopic synovectomy, radiosynoviorthesis, surveillance intervals, and systemic therapy should be supported by appropriate primary studies or high-quality systematic reviews.

3. Key Points of the Manuscript

* The case concerns ****diffuse-type TGCT of the knee****, formerly termed pigmented villonodular synovitis.

* The patient is a ****25-year-old man**** with chronic mechanical knee pain lasting four years.

* MRI demonstrated ****diffuse bicompartamental synovial involvement**** without extra-articular extension.

* Histopathology confirmed TGCT through characteristic ****hemosiderin deposition, multinucleated giant cells, and xanthomatous cells****.

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- * The patient underwent ****total open synovectomy without adjuvant therapy****.**
- * The early postoperative outcome was favorable at three months.**
- * The manuscript appropriately emphasizes the need for ****long-term surveillance because of recurrence risk****.**
- * The principal contribution is educational/clinical rather than a fundamentally novel therapeutic or diagnostic finding.**

4. Significance of the Manuscript

The manuscript has ****moderate clinical significance****.

TGCT should be considered in young patients with chronic unexplained monoarticular knee pain and swelling. The case demonstrates the importance of MRI in establishing the extent of disease and histopathology in confirming the diagnosis. It may also be useful for clinicians working in settings where arthroscopic facilities are limited and open synovectomy remains a practical surgical option.

However, the significance is reduced by the fact that the disease, MRI characteristics, pathological findings, and surgical management are already well established. The case would therefore be more valuable if the authors emphasize a specific educational or contextual aspect, such as:

- * prolonged diagnostic delay;**
- * extensive bicompartamental disease without extra-articular extension;**
- * decision-making regarding open versus arthroscopic synovectomy;**
- * management in a resource-limited setting;**

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*** rationale for withholding adjuvant therapy after macroscopically complete resection.**

5. Specific Recommendations for Revision

Major revision required

1. **Strengthen the novelty statement and explicitly distinguish this case from previously published TGCT knee cases.**

2. **Expand the literature review, particularly recent literature on:**

- * diffuse-type TGCT;**
- * recurrence following open versus arthroscopic synovectomy;**
- * CSF1/CSF1R-targeted therapies;**
- * indications for adjuvant treatment;**
- * long-term surveillance.**

3. **Provide longer follow-up, preferably with postoperative MRI, if such information is available.**

4. **Add a validated functional outcome score, if available.**

5. **Clarify the rationale for withholding adjuvant treatment.**

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6. ****Revise the discussion of recurrence rates**** and ensure that all numerical estimates are supported by appropriate references.
7. ****Clarify the surgical approach.**** The manuscript should explain whether the posterior/popliteal recesses were adequately assessed and treated through the anterior approach, given the MRI description of posterior involvement.
8. ****Improve the figure legends and image quality.**** Preoperative MRI images should ideally be included alongside intraoperative and histopathological images.
9. ****Avoid overstatement of treatment success.**** Three months without clinical recurrence should be described as an early outcome rather than evidence of long-term remission.
10. ****Check all references carefully**** for accuracy, DOI/PubMed details, publication status, and consistency with the claims made in the manuscript.

Recommendation to the Editor

**Major Revision**

****Justification:****

The manuscript describes a clinically relevant case of diffuse-type TGCT of the knee and is generally well structured, with adequate clinical, radiological, surgical, and histopathological descriptions. However, its novelty is currently limited because diffuse TGCT of the knee and open synovectomy are already well documented. The

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principal methodological limitation is the very short three-month follow-up, which is particularly important given the known recurrence potential of diffuse TGCT. In addition, the rationale for omitting adjuvant treatment requires stronger discussion and literature support, and postoperative functional/radiological assessment is limited.

****The manuscript could become publishable after substantial revision**, particularly if the authors clearly establish the case-specific educational value, strengthen the literature comparison, provide longer follow-up if available, and moderate claims regarding treatment outcome.**

Reviewer's final recommendation:

****Major Revision — suitable for reconsideration after satisfactory revision.****

Major Revision Justification — Line-by-Line Reviewer Comments

Recommendation: MAJOR REVISION

The manuscript is clinically relevant and potentially publishable as a case report, but substantial revision is required because of **limited case-specific novelty, inadequate long-term outcome assessment, insufficient justification of treatment decisions, incomplete objective outcome assessment, and several areas requiring stronger literature support and clarification.**

Line(s)	Issue identified	Reason for Major Revision
1–2	Title	The title is appropriate but does not indicate what is distinctive about this case. Since TGCT/PVNS of the knee is already extensively reported, the authors should clarify the specific clinical or therapeutic feature that makes this case report worthy of publication.
5–7	Background is general	The background provides standard information but does not establish a clear knowledge gap or case-specific

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Line(s)	Issue identified	Reason for Major Revision
		novelty. The authors should explain why this particular case adds value beyond existing reports.
8–13	Case description lacks some objective details	Although the clinical presentation is described, important objective information such as baseline pain score, functional status, knee circumference, and validated functional assessment is absent. These data would allow a meaningful assessment of postoperative improvement.
12–13	MRI description	The MRI findings are described qualitatively but not quantitatively. Lesion extent, volume, precise anatomical distribution, and representative MRI images should be provided to substantiate the classification as diffuse-type TGCT.
14–18	Treatment and outcome	The decision for total open synovectomy without adjuvant treatment requires stronger justification. In diffuse TGCT, treatment selection is clinically important because incomplete resection may result in recurrence.
17–19	Only 3-month follow-up	Major limitation. Three months is insufficient to evaluate recurrence in diffuse TGCT. Absence of recurrence at three months cannot establish treatment success or durable disease control. Longer follow-up should be provided if available.
20–22	Conclusion	The conclusion appropriately acknowledges surveillance, but the wording should avoid implying a favorable definitive outcome when only three months of follow-up is available.
26–32	Epidemiological claims	The reported knee involvement and recurrence figures require verification against recent high-quality studies. The authors should preferably cite systematic reviews or large contemporary cohorts.
30–32	Recurrence rate	The 25–50% recurrence range is broad and may vary according to surgical technique, disease extent, follow-up duration, and definition of recurrence. The authors should explain these factors rather than presenting the range without context.
37–40	Claimed clinical relevance/novelty	The statement that bicompartamental disease without extra-articular extension raises specific management questions needs stronger evidence. The authors should explicitly identify the novel aspect of the case .
42–48	Patient history	The history is reasonable but should include relevant

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Line(s)	Issue identified	Reason for Major Revision
		differential diagnoses considered during the four-year period and any previous investigations or treatments received before definitive diagnosis.
49–58	Diagnostic assessment	The MRI description is useful but would be stronger with actual MRI images and sequence information (e.g., T1, T2, gradient echo/SWI if available).
50–56	MRI interpretation	The statement that the MRI pattern was “consistent with” TGCT is appropriate, but MRI cannot replace histopathological confirmation. The authors should clearly distinguish radiological suspicion from definitive diagnosis.
59–67	Surgical intervention	The rationale for selecting an open anterior approach needs more detailed explanation, especially because the MRI reportedly demonstrated posterior/popliteal recess involvement. The authors should explain how the posterior disease was accessed and completely removed.
60–61	“Total synovectomy”	The term “total” implies complete removal of pathological synovium. Because postoperative MRI was not performed, objective confirmation of complete resection is lacking. The authors should use “macroscopically complete synovectomy” unless objective postoperative confirmation is available.
62–67	Intraoperative findings	The operative description is useful, but the relationship between the intraoperative findings and the MRI-defined disease extent should be clarified.
64–66	Histopathology	Histological findings are characteristic, but the pathology section would benefit from details such as microscopic architecture, magnification, staining methods, and representative histopathological images with appropriate legends.
68–70	Rehabilitation	Rehabilitation is described only briefly. The authors should provide information about postoperative range of motion, physiotherapy duration, and progression of weight-bearing where available.
71–73	Outcome	Pain improvement is subjective and insufficient as the sole outcome measure. A validated functional score and objective range-of-motion assessment should preferably be included.
74–84	Timeline	The timeline largely repeats information already provided

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Line(s)	Issue identified	Reason for Major Revision
		in the case presentation. It could be condensed and presented as a clear chronological table or figure consistent with CARE case-report recommendations.
85–95	Discussion	The discussion mainly reiterates established knowledge rather than critically comparing the present case with previously reported cases. A case report requires clearer comparison with relevant literature.
86–89	Epidemiology	The age/location discussion is accurate but does not provide a significant case-specific contribution. The authors should focus more on what is unusual or educational about this case.
90–95	MRI findings	The MRI discussion is largely textbook-like. It should instead compare the present MRI pattern with representative findings reported in previous diffuse TGCT knee cases.
96–99	Diagnostic delay	The four-year diagnostic delay is potentially an important feature, but the authors should discuss what diagnoses were initially considered and why definitive diagnosis was delayed.
100–108	Surgical management	The statement that open/combined surgery is preferable or associated with lower recurrence requires stronger and more contemporary evidence. Surgical outcomes should be discussed in relation to disease extent rather than making a generalized superiority claim.
105–106	Arthroscopic vs open recurrence	This is an important therapeutic statement but requires high-quality comparative evidence. The cited evidence should be carefully verified and the limitations of retrospective comparisons acknowledged.
106–108	Reason for open surgery	Limited availability of arthroscopy is a contextual factor, but the manuscript should distinguish between evidence-based clinical indication and resource-related surgical choice .
109–110	Adjuvant treatment	The statement that radiosynoviorthesis is “often proposed” four to eight weeks after surgery needs stronger supporting evidence and clarification regarding current practice.
111–119	Recurrence and surveillance	The recurrence discussion is important, but annual MRI for four years should be supported by an appropriate guideline, consensus statement, or contemporary review.

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Line(s)	Issue identified	Reason for Major Revision
113–118	No postoperative imaging	This is a significant methodological limitation. Without postoperative MRI, residual disease cannot be confidently excluded despite the surgeon's macroscopic assessment.
115–117	No adjuvant therapy	The authors need to explain why adjuvant treatment was withheld despite diffuse disease and posterior recess involvement. The decision should be compared with current management recommendations.
120–125	Systemic therapy	The discussion of CSF1/CSF1R-targeted treatment is relevant but should be updated with the latest approved/available therapies and current indications. Imatinib alone may not adequately represent the current systemic-treatment landscape.
126–137	Limitations	The authors acknowledge several limitations, which is a strength, but these limitations are substantial enough that the manuscript's claims of treatment success should be moderated.
127–129	Short follow-up	This should be emphasized as the principal limitation because diffuse TGCT is characterized by potentially late recurrence.
130–132	Lack of functional score/postoperative MRI	Objective outcome assessment is insufficient. The authors should provide validated functional measures and postoperative imaging if available.
131–132	No quantitative MRI assessment	Quantification is not necessarily mandatory for a case report, but the authors should at least provide adequate anatomical description and representative imaging demonstrating disease extent.
133–136	Generalizability	The resource-limited setting is relevant, but the authors should discuss how the selected surgical approach may differ from contemporary practice in centers with arthroscopic and multidisciplinary TGCT expertise.
139–148	Conclusion	The conclusion is generally appropriate but should be more conservative because the patient has only three months of documented follow-up.
143–145	“Macroscopically complete resection”	Macroscopic completeness does not necessarily mean microscopic or radiological complete remission. This distinction should be explicitly acknowledged.
145–148	Case significance	The conclusion should state what clinicians can specifically learn from this case rather than simply reiterating that TGCT should be considered in young

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Line(s)	Issue identified	Reason for Major Revision
150– 158	Declarations	patients. These sections are acceptable, but the patient perspective is very brief. If required by the target journal, it should be expanded according to the journal's case-report guidelines.
160– 169	Figures	The manuscript lists intraoperative photographs but does not provide adequate preoperative MRI and histopathological visual documentation in the supplied text. MRI and pathology images are particularly important for supporting the diagnosis.
171– 188	References	Several references are older or secondary sources. The authors should update the bibliography with recent systematic reviews, consensus recommendations, large cohorts, and contemporary treatment studies.
182– 185	Recent treatment literature	The discussion of CSF1/CSF1R therapy should be supported by current evidence rather than relying primarily on older imatinib data.
186– 188	Thesis reference	The usefulness and accessibility of the thesis reference should be reconsidered. Where possible, peer-reviewed primary literature should be cited instead.
189– 204	Figure duplication	The figure legends are repeated after the reference list. This should be corrected as a formatting/editorial issue.

Most Important Reasons for Major Revision**1. Insufficient novelty**

The diagnosis and treatment are already well established. The authors need to clearly demonstrate what is distinctive about this particular case.

2. Only three months of follow-up

This is the most important clinical limitation. Diffuse TGCT has a meaningful recurrence risk, and three months cannot establish long-term treatment efficacy.

3. No postoperative MRI

The manuscript states that the synovectomy was complete, but there is no postoperative imaging to objectively exclude residual disease.

4. No validated functional outcome

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Pain improvement and return to weight-bearing are insufficient to objectively quantify postoperative recovery.

5. Insufficient justification for no adjuvant treatment

The authors need to explain why adjuvant therapy was not selected despite diffuse disease and discuss this decision against current evidence.

6. Unclear management of posterior disease

MRI describes extension into the posterior/popliteal recess, but surgery is described as an anterior approach. The authors should explain how the posterior component was assessed and excised.

7. Discussion is more descriptive than critical

The discussion largely repeats established knowledge. A stronger comparison with previously published TGCT knee cases/series is required.

8. Literature requires updating

The manuscript should incorporate recent evidence concerning diffuse TGCT, recurrence, synovectomy techniques, radiosynoviorthesis, and CSF1/CSF1R-targeted therapy.

9. Some treatment claims need stronger evidence

Statements regarding recurrence rates, superiority of open surgery, and recommended MRI surveillance should be supported by appropriate high-quality references.

10. Figures need improvement

Preoperative MRI and histopathological images should be prominently presented with adequate legends and labels. The repeated figure-list section should also be removed.

Final Reviewer Recommendation**Recommendation: MAJOR REVISION****Reviewer justification:**

The manuscript presents a clinically relevant case of diffuse-type tenosynovial giant cell tumor of the knee in a young adult, with appropriate

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MRI and histopathological confirmation and a clearly described surgical intervention. However, substantial revision is necessary before the manuscript can be considered for publication. The principal concerns are limited case-specific novelty, only three months of follow-up despite the substantial recurrence potential of diffuse TGCT, absence of postoperative MRI or validated functional assessment, insufficient justification for withholding adjuvant treatment, and inadequate clarification of management of the posterior disease component. In addition, several statements concerning recurrence rates, surgical approaches, surveillance, and systemic therapy require stronger and more up-to-date supporting evidence. The discussion should provide a more critical comparison with previously published cases and contemporary literature. Therefore, I recommend **Major Revision**, with reconsideration after the authors adequately address these clinical, methodological, literature, and presentation-related concerns.