•**Major advantages:**
•Elimination of **dimethyl sulfoxide (DMSO)** → reduced immediate infusion toxicity.
•**Simplified logistics** and **substantial cost reduction**, crucial for constrained healthcare systems.

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Peripheral stem cell autologous transplantation without cryopreservation: single center experience from the hematology department of Oran military hospital in the management of multiple myeloma.

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BACKGROUND

High-dose therapy followed by autologous stem cell transplantation (ASCT) remains a key component of treatment for eligible patients with multiple myeloma. However, the lack of cryopreservation facilities limits access to transplantation in many resource-constrained settings. The use of non-cryopreserved peripheral blood stem cells stored at 4 ℃ represents a simple and cost-effective alternative. This study evaluated the feasibility, safety, and outcomes of ASCT without cryopreservation.

PATIENTS & METHODS

Aspect	Details
Study design	Retrospective, single-center
Population	44 patients with multiple myeloma
Setting	Hematology Department, Oran Hospital- Algeria
Period	September 2015 – December 2025
Stem cell mobilization	Granulocyte colony-stimulating factor (G-CSF) alone
Storage	Peripheral blood stem cells kept at +4 °C
Conditioning regimen	High-dose melphalan (200 mg/m²), dose adjusted for renal impairment
Reinfusion	Within 24 hours after conditioning

RESULTS

RESULT 1

➢ ***Patient Characteristics***

- Median age (range) 58 (27–68) years
- Sex ratio (M/F) 1.6
- Durie–Salmon stage III 100%
- └ Renal impairment 41%
- ISS stage III 62%

RESULT 2

➢ ***Induction Therapy***

VTD 51% VCD 36%
PAD 13%

➢ **Overall response rate (ORR):** 71% after first-line therapy

CR 13% VGPR 33% PR 25%

RESULT 3

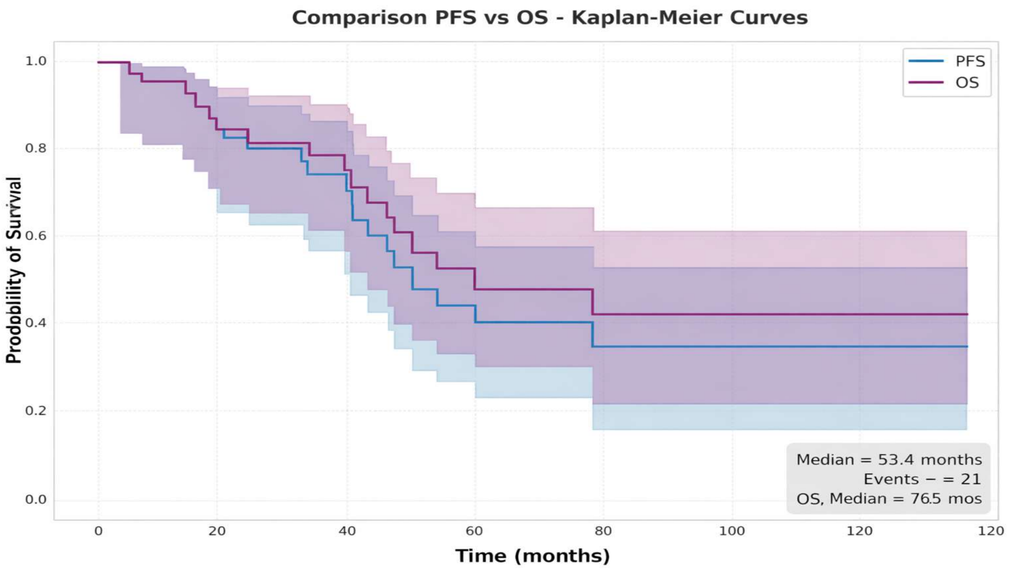
➢ **Transplant Outcomes**

Median duration of aplasia: 9 days

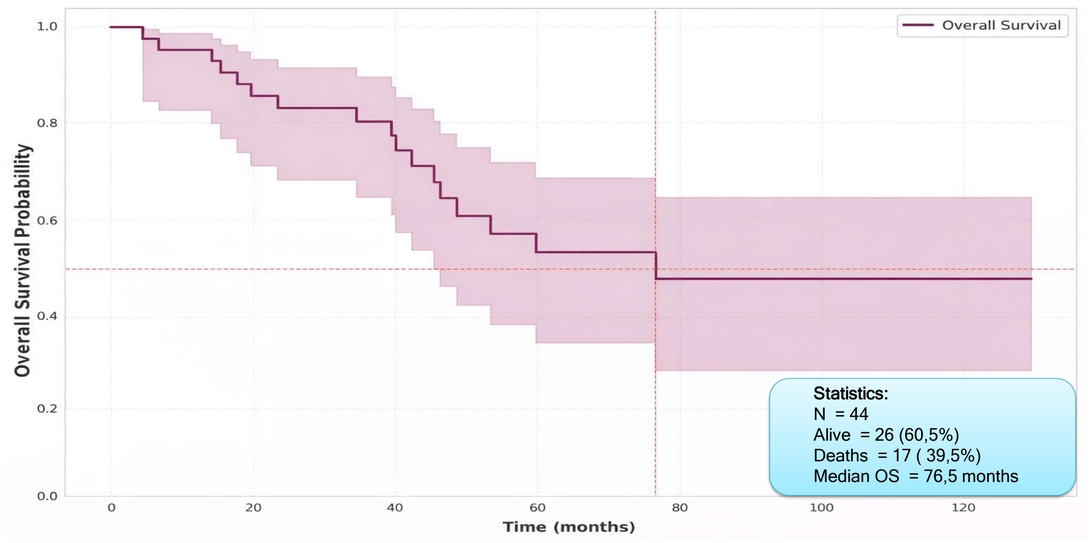
Complications: predominantly grade II

➢ **Response improvement after ASCT:**

Conversion to **complete response (CR)** in **12 pts**



RESULT 4



Advantages:

- ✓ Represents a validated and pragmatic strategy, particularly effective in resource-limited settings.
- ✓ Short-term storage at +4 °C maintains adequate cell viability and functionality.
- ✓ Engraftment times and response rates comparable to those achieved with cryopreserved grafts.
- ✓ Elimination of dimethyl sulfoxide (DMSO) → reduced immediate infusion toxicity.
- ✓ Simplified logistics and substantial cost reduction, crucial for constrained healthcare systems.

Limitations:

- ○ No possibility of backup grafts, limiting double or salvage autograft strategies.
- ○ Reduced organizational flexibility.

CONCLUSION

These results highlight that Non-cryopreserved ASCT combines efficacy, safety, and cost-efficiency, and should be considered a robust alternative to standard transplantation strategies, particularly in resource-constrained settings

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