The 11th World Congress on CONTROVERSIES IN MULTIPLE MYELOMA (COMy)

Comparison of Single, Tandem, and Second Autologous Stem Cell Transplant (ASCT) in Patients with Multiple Myeloma (MM) at Saskatchewan Cancer Agency (SCA): A Retrospective Population-Based Study

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INTRODUCTION

- Multiple myeloma (MM) is the second leading type of hematological malignancy.
- Autologous Stem Cell Transplantation (ASCT), following high-dose chemotherapy, remains the first-line of treatment for eligible patients.
- The role of tandem ASCT, which involves two ASCTs within 6 months, as an upfront therapy remains debatable.
- Second ASCT, often employed as salvage therapy in relapsed cases, warrants further investigation regarding its comparative efficacy and safety.

METHOD

- We conducted a retrospective chart review cohort study of MM patients who underwent ASCT between 2010 and 2020.
- Data were collected using REDCap and analyzed in SPSS Version 25.
- Results reflect data collected up to April 2025 and may not include all patients.

RESULTS

- A total of 126 patients were included, with a mean age of 58.2 ± 7.4 years.
- Common comorbidities included diabetes (15.1%), Chronic Pulmonary Disease (10.3%), and Chronic Kidney Disease (9.5%).
- High-risk cytogenetics, defined as having at least one of the: del17p, t(4;14), t(14;16), were present in 34.1%, and 28.6% of patients had ISS stage III.
- Bone lesions at diagnosis were reported in 72.2%.
- Patients were grouped as single ASCT (n=101), tandem ASCT (n= 18), and second ASCT (n= 7).
- No transplant related mortality was observed.

Patients Demographics	(Total Number of Patients = 126)
Age at Diagnosis (y)	
Mean ± SD	58.2 ± 7.4
Range	33 - 68
Sex	
Male	77 (61%)
Female	49 (38.9%)
Common Comorbidities	
Chronic Pulmonary Disease	13 (10.3%)
Diabetes without End Organ Damage	19 (15.1%)
Chronic Kidney Disease	12 (9.5%)
Bone Lesion at Diagnosis	
Yes	91 (72.2%)
No	28 (22.2%)
Cytogenetic Risk	
High Risk	43 (34.1%)
Standard Risk	66 (52.4%)
ISS Stage	
I	24 (19%)
II	62 (49.2%)
III	36 (28.6%)

Table 1. Patients Demographics

Baseline Lab Results	Mean ± SD
Serum M protein (g/L)	28.2 ± 21.6
FLC Kappa (mg/L)	1909.5 ± 4385.5
FLC Lambda (mg/L)	595.6 ± 2577.8
β2Microglobulin (mg/L)	6.1 ± 5.5
Serum Hb (g/L)	108.9 ± 25
ESR (mm/hr)	75 ± 46.5
Serum Ca (mmol/L)	2.4 ± 0.4
Serum Uric Acid (µmol/L)	351.7 ± 135.4
Serum Cr (µmol/L)	146.8 ± 133.7
GFR (mL/min)	74.4 ± 37.2
Serum Albumin (g/L)	32.3 ± 6.7
Serum LDH (U/L)	213.7 ± 114

Table 2. Baseline Lab Results

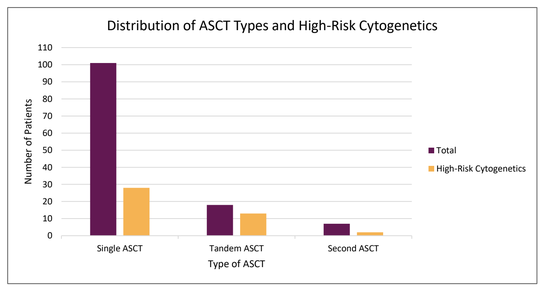

Figure 1. Distribution of ASCT Types and High-Risk Cytogenetics

- Mean follow-up duration was 60.5 ± 36.3 months.
- Mean Overall Survival (OS) was highest in the second ASCT group (141.2 ± 17.2 months), followed by tandem (102.9 ± 15.5 months) and single ASCT (94.1 ± 7.1 months).
- Progression Free Survival (PFS) followed a similar trend; in the second ASCT group demonstrated the greatest benefit (124.5 ± 17.9 months), followed by tandem (82.2 ± 14.2 months), and single ASCT (75.4 ± 5.5 months).
- In high-risk patients, tandem ASCT showed longer OS (72.3±14.0 months) and PFS (60.4±12.6 months) than single ASCT (57.3±5.7 months and 43.5±5.9 months, respectively).

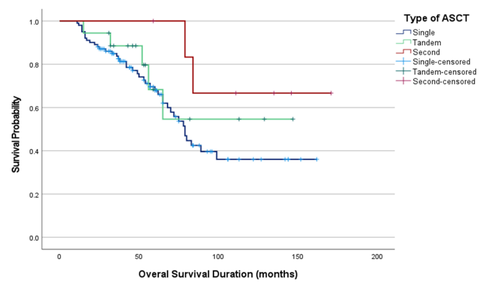

Figure 2. Overall Survival from ASCT

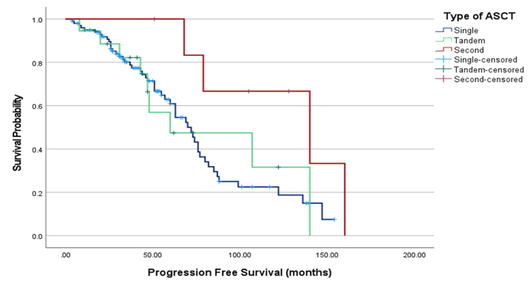

Figure 3. Progression Free Survival from ASCT

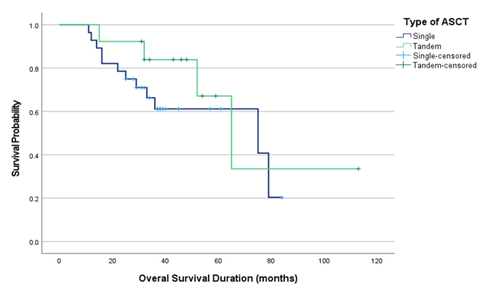

Figure 4. Overall Survival in Patients with High-Risk Cytogenetics

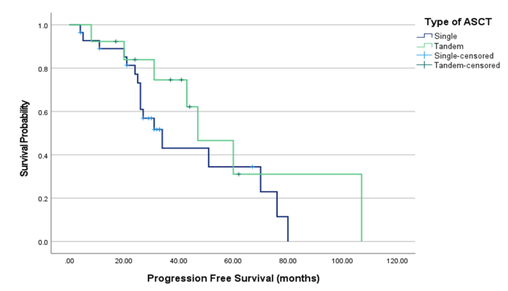

Figure 5. Progression Free Survival in Patients with High-Risk Cytogenetics

CONCLUSION

- This study provides population-based evidence on the comparative effectiveness of single, tandem, and second ASCT in MM.
- Results support that second and tandem ASCT are associated with significantly improved OS compared to single ASCT and reinforce second ASCT as a viable option in relapsed cases.
- Notably, tandem ASCT showed superior OS and PFS in high-risk patients.

REFERENCES

1. Mahajan, S., Tandon, N., & Kumar, S. (2018). The evolution of stem-cell transplantation in multiple myeloma. Therapeutic advances in hematology, 9(5), 123–133. https://doi.org/10.1177/2040620718761776
2. Gössi, U., Jeker, B., Mansouri Taleghani, B., Bacher, U., Novak, U., Betticher, D., Egger, T., Zander, T., & Pabst, T. (2018). Prolonged survival after second autologous transplantation and lenalidomide maintenance for salvage treatment of myeloma patients at first relapse after prior autograft. *Hematological oncology*, *36*(2), 436–444. https://doi.org/10.1002/hon.2490
3. Dou, X., Ren, J., Li, J., Liu, X., Bao, L., Chen, Y., Zhao, P., Zhong, Y., Peng, N., Wen, L., Cao, L., Liu, Y., Deng, D., Wang, F., Wang, L., Liu, H., Huang, X., Mo, X., & Lu, J. (2025). Tandem Versus Single Autologous Stem Cell Transplantation for High-Risk Multiple Myeloma in the Era of Novel Agents: A Real-World Study of China. Cancer medicine, 14(1), e70573. https://doi.org/10.1002/cam4.70573
4. Malkan, U. Y., Demiroglu, H., Buyukasik, Y., Karatas, A., Aladag, E., & Goker, H. (2021). Comparison of single and double autologous stem cell transplantation in multiple myeloma patients. *Open medicine (Warsaw, Poland)*, *16*(1), 192–197. https://doi.org/10.1515/med-2021-0216

ACKNOWLEDGMENT

- This research was supported by a grant from the Saskatchewan Cancer Agency.
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