



西安市红会医院 西安交通大学医学部附属红会医院

# Allograft versus Autograft for Posterior Atlantoaxial Fusion with Screw-rod System: A Prospective Comparative Study

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## Background

- Autograft bone is used very often in posterior atlantoaxial fusion and has been reported to get excellent fusion rates with modern atlantoaxial fixation constructs.
- However, donor-site morbidity is a problem need to face.
- Some authors have reported using allograft bone instead of autograft bone to avoid donor-site complications in posterior atlantoaxial fusion and getting good results as well.





## Background

- However, most of the authors confirmed fusion based on no movement on dynamic radiographs, which is not reliable.
- There is no prospective comparative study to compare the effectiveness of allograft and autograft in atlantoaxial fusion routinely using computed tomography (CT) image yet.





- **Purpose:** To compare the effectiveness of allograft and autograft in atlantoaxial fusion, and to evaluate the feasibility of using allograft for atlantoaxial fusion.
- **Study Design:** A prospective comparative study.
- **Patient Sample:** Forty-one consecutive patients who underwent atlantoaxial fusion in our spine centre.
- **Outcome Measures:** Fusion was determined based on the presence of bridging bone on CT image.





## Materials and methods

- Patients: forty-one consecutive patients who needed atlantoaxial fusion.
- Grouping: **allograft group**, using the mixed material of morcellized allograft and local autograft for fusion; **autograft group**, using morcellized iliac crest autograft for fusion.
- Fixation: screw-rod system.
- Evaluation: CT and dynamic radiographs.





Table 1 General information of 41 patients and results of evaluation indexes

	Allograft group	Autograft group	<i>P</i>
Number of cases	24	17	—
Mean age (years)	43.6 ± 12.0	41.1 ± 14.1	<i>P</i> > 0.05
Sex (male/female)	14 / 10	10 / 7	<i>P</i> > 0.05
Fusion rate <sup>#</sup>	8.3%	88.2%	<i>P</i> < 0.05
Stability rate <sup>§</sup>	100%	100%	—
Perioperative complication rate	4.2%	11.8%	<i>P</i> > 0.05
Blood loss (ml)	170.8 ± 60.6	235.3 ± 46.0	<i>P</i> < 0.05
Operation time (min)	123.3 ± 18.3	142.4 ± 23.6	<i>P</i> < 0.05

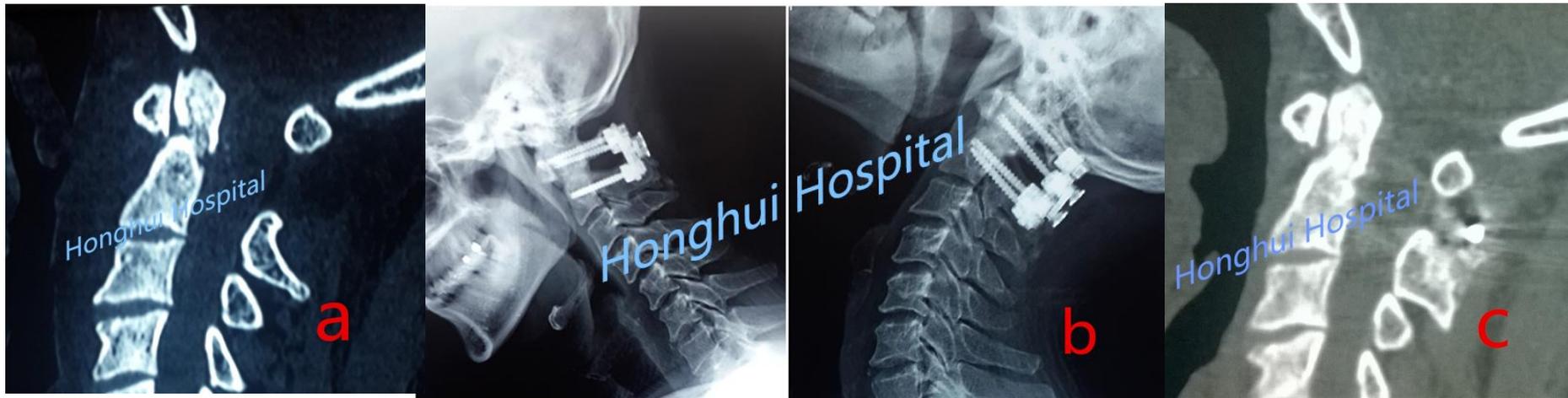
# Evaluated by CT images.

§ Evaluated by dynamic radiographs.





# Imaging results of a 42-year-old male in allograft group.





# Imaging results of a 25-year-old male in autograft group.





## Conclusions

- Allograft is not reliable for posterior atlantoaxial fusion even with the rigid internal fixation of modern constructs.
- Autograft is still the golden standard for atlantoaxial fusion despite of the donor-site morbidity.
- The confirmation of fusion should be based on the presence of bridging bone on CT image.





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***Thank you for your attention!***



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# Disclosure

All the authors have nothing to disclose.

