

Do digital (CAD/CAM) removable complete dentures perform better clinically than conventional removable complete dentures?

Clinical Problem

- The use of CAD-CAM technology in complete denture fabrication is a relatively new phenomenon.
- It has the potential to improve outcomes, decrease costs and decrease chairside time.
- However, evidence regarding its use is limited.

Clinical Question

For adult patients with at least one completely edentulous jaw, how do digital removable complete dentures (at least part of workflow including CAD/CAM technology) perform compared to removable complete dentures fabricated by traditional methods, in terms of clinical performance and patient-reported outcomes?

Evidence Search

Search Date: February 5th, 2022

MEDLINE (Ovid): 228 evidence sources

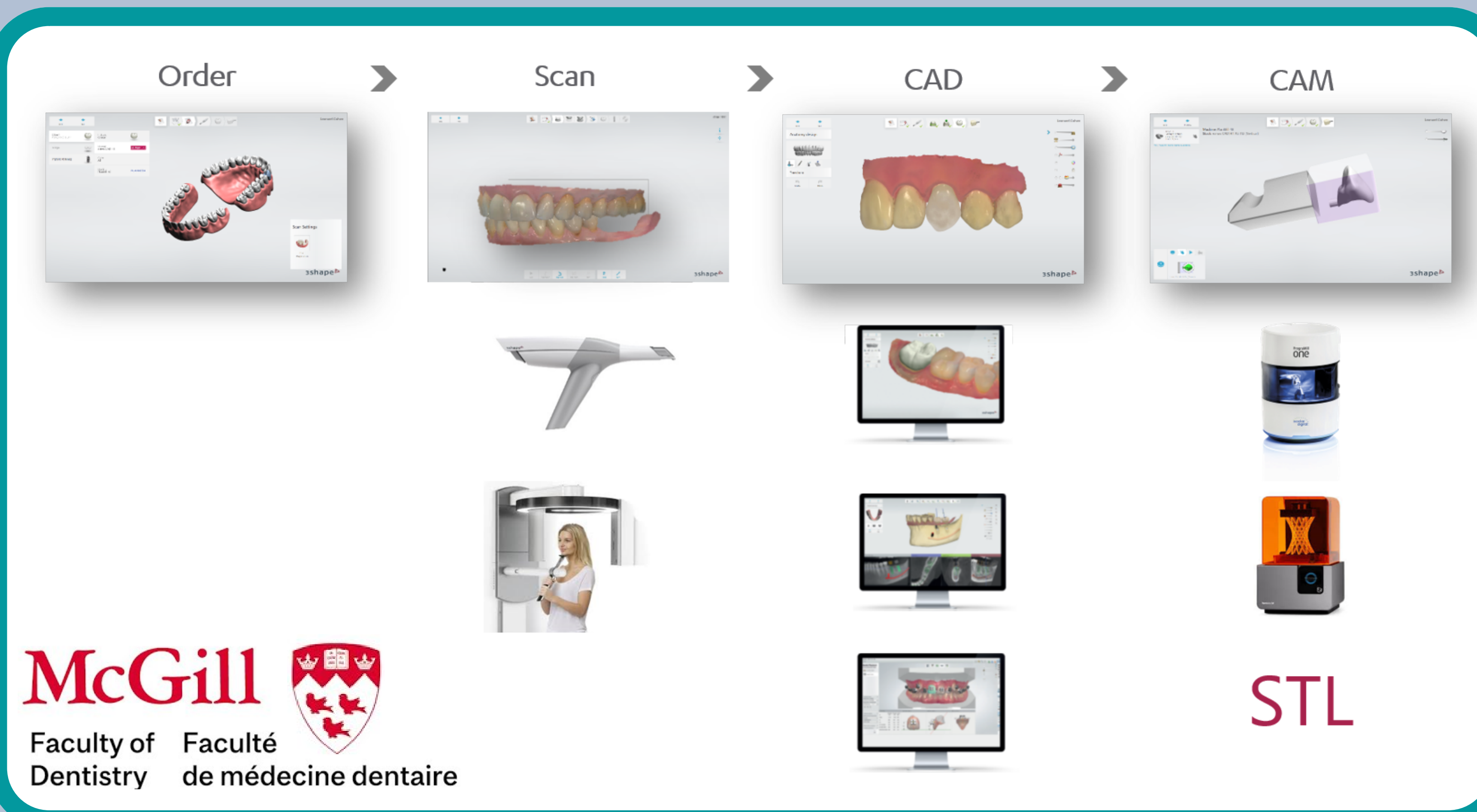
Additional Search: EBD journals, ADA EBD website, TRIP database, C.A.T. website, Cochrane Database.

Search:

(complete denture*.mp. OR exp Denture, Complete) AND (((computer aided or computer assisted).ti,ab,kf. OR exp Computer-Aided Design) OR digital adj2 denture*.mp. OR CAD? CAM.mp. OR CAD CAM.mp.))

Clinical Bottom Line

Two sources provide high-quality, but limited, evidence that CAD-CAM milled dentures are superior to conventionally fabricated dentures in terms of retention, cost, and chairside time. Conventional complete dentures, however, were superior to digital dentures in terms of patient-related outcomes such as esthetics.



Acknowledgements

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References

1. Srinivasana, M., Kamnoedboon, P., McKenna, G., Angst, L., Schimmel, M., Özcan, M., Müller, F. CAD-CAM removable complete dentures: A systematic review and meta-analysis of trueness of fit, biocompatibility, mechanical properties, surface characteristics, color stability, time-cost analysis, clinical and patient-reported outcomes. *Journal of Dentistry*. 2021 Aug 6; 113 DOI: 10.1016/j.jdent.2021.103777
2. Peroz, S., Peroz, I., Beuer, F., Sterzenbach, G., von Stein-Lausnitz, M. Digital versus conventional complete dentures: A randomized, controlled, blinded study. *The Journal of Prosthetic Dentistry*. 2021. DOI: 10.1016/j.prosdent.2021.02.004

Results

Evidence Quality:

- Clinically meaningful and decisive results (Srinivasana *et al.*, 2021).
- No significant differences in oral health-related quality of life between CD vs DD (Peroz *et al.* 2021).

Strengths:

- Multiple databases searched, double-blind, inclusion/exclusion criteria, risk of bias assessed, evidence quality and meta-analyses, no conflicts of interest.
- OHIP-49 has been validated.

Limitations:

- In vitro studies, insufficient population demographics, short-term follow-up, methodological flaws, small sample size, MDs not reported, sample selection bias, missing data, no washout period.

Applicability

- Studies done in the US, Japan, Germany and Switzerland; may have different treatment philosophies and interfaces compared to Canada.
- Applicable to the average elderly patient with complete tooth loss.
- Relevant performance and patient-reported outcomes were considered, however patient-related factors (SES, comorbidities) were not.
- Implementing digitized protocols is feasible if a dental clinic has adequate resources.
- More research needed.