The Evaluation of Periodontal Ligament Cell Viability for an Avulsed Tooth Using Various Storage Media: A Systematic Review and Meta-Analysis

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Abstract:

Background: Many storage mediums are available for the storage of avulsed teeth to preserve the viability of periodontal ligament (PDL) cells before replantation; however, it is unclear which medium is the optimal option**.**

Aim: This systematic review and meta-analysis (MA) aimed to evaluate the effectiveness of various storage media in preserving the viability of periodontal ligament (PDL) cells, using Hank's Balanced Salt Solution (HBSS) as a reference standard for comparison.

Review Method: This systematic review was performed according to PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) guidelines. The database including Medline (via. PUBMED), Scopus, The Cochrane Controlled Clinical trials Register, Google scholar were thoroughly searched from 2014 to 2024. The reference articles which have been retrived were exported to Mendeley Desktop software 1.13.3.43.

Result: HBSS medium did not show significant difference in cell viability when compared with placentrix (Mean difference: 0.56, 95% CI (-5.64, -0.04), p= 0.05, I2=96%), whereas aloevera showed superior cell viability compared to HBSS.

Conclusion: This systematic review and MA suggests that placentrex and aloevera could represent an alternative to HBSS. However, more studies are necessary to obtain a reliable conclusion.

Keywords:

Tooth Avulsion, Culture Media, Tooth Replantation, Hank's Balances Salt Solution, Placentrex, Aloe vera.