EVALUATION OF ATTACHABLE INTRA ORAL WOUND DRESSING TAPE IN ENHANCING POST EXTRACTION WOUND HEALING

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Abstract

Background: Effective control of post-operative bleeding and enhancement of wound healing are essential for optimal recovery following minor oral surgical procedures. Conventional cotton/gauze pressure packs often fail to maintain stable adherence, resulting in patient discomfort and delayed healing. Ora-Aid, a hydrocolloid-based adhesive dressing, offers improved stability and moisture retention that may benefit early healing. **Materials and Methods:** A randomized clinical study was conducted on 23 patients requiring similar minor oral surgical procedures. Participants were allocated to either the Ora-Aid group or the cotton/gauze group. Post-operative pain, wound healing progression, and bleeding control were assessed on Days 1, 2, and 3 using standardized clinical scales. Statistical analysis compared mean scores between groups with significance set at $p < 0.05$. **Results:** Ora-Aid demonstrated significantly superior outcomes in all domains. Post-operative bleeding was notably lower in the Ora-Aid group, with improved hemostatic stability observed immediately after placement and during the early healing period. Pain scores showed a consistent reduction with Ora-Aid across Days 1–3 ($p < 0.01$), corresponding with greater patient comfort. Wound healing parameters revealed faster epithelialization and better tissue response in the Ora-Aid group compared to cotton/gauze. The average healing score was significantly higher for Ora-Aid (4.4 ± 0.5) than cotton/gauze (3.2 ± 0.8), ($p = 0.001$). Early wound closure and reduced inflammatory signs were more frequently observed in the Ora-Aid group. **Conclusion:** Ora-Aid proved more effective than conventional cotton/gauze for controlling post-operative bleeding and enhancing early wound healing. Its adhesive stability, moisture maintenance, and protective barrier effect contributed to improved clinical outcomes and patient comfort. Ora-Aid may serve as a reliable alternative to conventional dressings in routine oral surgical practice.

Introduction

Tooth extraction initiates a rapid sequence of healing events involving clot formation, inflammation, granulation tissue development, and epithelial remodeling, and the quality of early socket protection plays a critical role in determining overall postoperative healing outcomes[1]. Conventional management—typically relying on gauze pressure and analgesics—may offer only temporary clot stabilization and does not consistently protect the wound from salivary contamination, mechanical irritation, or premature clot dislodgement[1,2]. These limitations contribute to patient discomfort, delayed epithelialization, and complications such as alveolar osteitis, emphasizing the need for improved local wound-care strategies[10]. Attachable intra-oral wound dressing tapes have emerged as an alternative method designed to adhere to the mucosa, shield the extraction site, and maintain a moist environment conducive to faster healing[1]. Evidence demonstrates that such tapes can reduce postoperative bleeding and enhance comfort compared with standard gauze, likely due to their stable coverage and reduced need for repeated dressing changes[1,3]. In high-risk groups such as smokers—who commonly experience compromised healing—novel adhesive dressings like Ora-Aid have shown favorable changes in salivary biomarkers, suggesting improved early wound activity[2].

Adjunctive materials such as hyaluronic acid have also been evaluated for intra-socket healing. Randomized controlled trials report that hyaluronic acid gel supports soft-tissue healing and early bone density gains following third-molar surgery[4], while additional research indicates potential benefits in medically compromised patients such as diabetics[7]. Retrospective analyses similarly highlight the role of hyaluronic acid in enhancing early postoperative wound status following dental procedure[8].Advancements in biomaterials have introduced hydrogel-based dressings that exhibit robust adhesion and stability in the wet oral environment, promoting favorable tissue response and improved handling in clinical settings[5]. Conversely, older materials such as alginate-based hemostatic dressings have shown foreign-body reactions and delayed healing in extraction sockets, underscoring the need for better-designed intra-oral dressings[6]. Chitosan-based dressings also demonstrate promising hemostatic and regenerative potential, supporting accelerated soft-tissue repair in extraction wounds[9]. Collectively, these findings justify further evaluation of attachable intra-oral wound dressing tapes as a practical, cost-effective approach for enhancing hemostasis, patient comfort, and early soft-tissue healing following dental extractions[1-4].

Methodology

This prospective, randomized split-mouth clinical study was carried out in the Department of Oral and Maxillofacial Surgery at the Sibar Institute of Dental Sciences over a two-month duration, following approval from the Institutional Ethics Committee. Individuals between 18 and 45 years of age requiring bilateral closed extraction of anterior or premolar teeth diagnosed with chronic irreversible pulpitis were recruited. To ensure unbiased allocation, simple random sampling was utilized. The sample size was determined using the G*Power software (version 3.1.9.4), assuming an effect size of 0.5, a significance level of 0.05, and a study power of 80%, which yielded a minimum requirement of 23 subjects. Eligible participants included ASA I and II patients aged 18–45 years who required bilateral anterior or premolar extractions by a closed technique and were willing to provide written informed consent. Exclusion criteria were the presence of active infection or pathology at the surgical site, bleeding disorders, systemic medication use, pregnancy or lactation, and current oral contraceptive use. Each participant underwent treatment in two stages based on the split-mouth protocol. One side was randomly assigned as the Experimental Site, where extraction was performed followed by immediate application of Ora-Aid. After an interval of one week, the contralateral side was treated, and a routine cotton or gauze pack was placed to serve as the Control Site. Postoperative assessments included bleeding evaluation at 1 hour, pain scores on postoperative days 1, 2, and 3 using a Visual Analogue Scale (VAS), and clinical wound healing assessment on day 7.

Fig.1, Fig.2, Fig:3: Placement of Ora Aid Attachable Intro-oral Dressing Immediately after Extraction

All collected data were subjected to appropriate statistical analysis. Descriptive statistics were used for demographic and baseline characteristics. Parametric variables were compared using paired t-tests and repeated measures ANOVA to evaluate differences between the two sides over multiple time intervals. The Chi-square test was used to assess categorical outcomes such as bleeding. For non-parametric data, within-subject comparisons were performed using the Wilcoxon signed-rank test. A p-value of less than 0.05 was considered indicative of statistical significance.

Results

Group	Bleeding(n)	No Bleeding(n)	Mean Rank	Z-Value	P-Value
Ora-Aid	1(43%)	22 (95.7%)	20.5	-2.65	0.008
Cotton/Gauze	7 (30.4%)	16(69.6%)	13.5		

Table 1: Post-extraction Bleeding (McNemar's Test)

The comparison of post-extraction bleeding between the two dressing materials showed a statistically significant difference. Only **1 patient (4.3%)** experienced bleeding at the Ora-Aid site, whereas **7 patients (30.4%)** had bleeding when cotton/gauze was used. McNemar's test yielded a **Z-value of –2.65** with a **p-value of 0.008**, indicating that the reduction in bleeding with Ora-Aid is statistically significant ($p < 0.05$).

These findings suggest that **Ora-Aid provides superior hemostasis** compared to the conventional cotton/gauze pack, leading to fewer postoperative bleeding events.

Day	Ora-Aid(Mean ± SD)	Cotton/Gauze (Mean ± SD)	Z-Value	P-Value
Day 1	4.4 ± 1.1	6.2 ± 1.3	-3.18	0.001
Day 2	2.5 ± 0.9	4.8 ± 1.2	-3.52	0.000
Day 3	1.2 ± 0.7	3.6 ± 1.1	-3.65	0.000

Table 2: Postoperative Pain (VAS Scores, Wilcoxon Signed-Rank Test)

A significant reduction in postoperative pain was observed at all evaluated time points in the Ora-Aid group compared to the cotton/gauze group. On **Day 1**, the mean pain score with Ora-Aid was **4.4 ± 1.1**, markedly lower than **6.2 ± 1.3** in the cotton/gauze group, with a **Z-value of –3.18** and a statistically significant **p-value of 0.001**. By **Day 2**, pain further decreased to **2.5 ± 0.9** in the Ora-Aid group versus **4.8 ± 1.2** in the control group. This difference was highly significant (**Z = –3.52, p**

= **0.000**). On **Day 3**, the Ora-Aid site continued to show substantially lower pain scores (**1.2 ± 0.7**) compared to the cotton/gauze site (**3.6 ± 1.1**), with the strongest statistical significance (**Z = –3.65, p = 0.000**). These results clearly indicate that **Ora-Aid consistently provides superior pain reduction** throughout the early postoperative period when compared with conventional cotton/gauze dressing.

Group	Mean ± SD	T-value	P-value
Ora-Aid	4.4 ± 0.5	3.82	0.001
Cotton/Gauze	3.2 ± 0.8		

Table 3: Wound Healing (Day 7 – Landry Index, Unpaired t-test)

The comparison of wound-healing scores on Day 7 demonstrated a statistically significant difference between the two dressing materials. The **Ora-Aid group showed a higher mean healing score (4.4 ± 0.5)** compared with the **cotton/gauze group (3.2 ± 0.8)**. The **t-value of 3.82** and **p-value of 0.001** indicate that this difference is highly significant ($p < 0.05$). These findings suggest that **Ora-Aid promotes better and faster wound healing** than the traditional cotton/gauze dressing.

Discussion

The present study demonstrates that the application of an attachable intra-oral wound dressing tape, such as Ora-Aid, plays a meaningful role in reducing postoperative pain and supporting early socket healing after dental extraction. Although various biologically active materials have been evaluated in extraction wound care, the fundamental principles of effective socket healing—protection of the blood clot, reduction of inflammation, and stabilization of the healing environment—remain consistent across the literature [11–13]. These principles help explain the clinical benefits observed with Ora-Aid, even though the dressing itself is non-biologic and functions primarily through mechanical protection. A central factor in the reduction of early postoperative pain is the preservation of clot integrity. Pain following extraction is strongly associated with clot dissolution, inflammatory exposure of bone walls, and mechanical irritation of the socket. Multiple studies evaluating advanced wound-care materials emphasize that early coverage of the socket reduces exposure to irritants and minimizes nociceptive stimulation [14,15]. The secure adhesion provided by Ora-Aid accomplishes this by shielding the socket from tongue movement, food debris, and salivary enzymes, which are known contributors to clot breakdown and early pain. Improved

patient comfort observed after the application of the dressing is consistent with findings from studies assessing other protective biomaterials. Research evaluating intraoral wound coverings repeatedly highlights that a protected, moist environment leads to reduced postoperative discomfort and fewer pain-related complications [16–18]. These principles correlate with Ora-Aid's behavior, as the dressing creates a thin, flexible barrier that prevents desiccation of the socket, reduces frictional trauma, and lessens inflammatory stimuli—a mechanism strongly aligned with the broader wound-healing literature. Enhanced early soft-tissue healing seen in this study may also be attributed to the microenvironment created by the dressing. Evidence from controlled extraction-socket studies shows that maintaining moisture and minimizing external contamination accelerates epithelial migration and reduces inflammatory cell load [19,20]. Although Ora-Aid does not deliver growth factors or biologically active molecules, its ability to retain moisture and protect the socket supports the same fundamental processes that contribute to accelerated epithelial coverage. The conceptual foundation for these observations is supported by general wound-management science. Research on dry socket management demonstrates that dressings which stabilize the clot and reduce environmental stress result in faster granulation formation and improved healing scores [21,22]. These studies emphasize that pain control and healing are interconnected outcomes driven by the protection of the wound surface—reinforcing the rationale for using a physical dressing like Ora-Aid. Broader wound-care literature underscores the importance of moisture retention in healing. Principles described in pharmaceutical wound-science sources highlight that maintaining a hydrated wound environment prevents clot shrinkage, supports autolytic cleaning, and enhances epithelial proliferation [23]. This aligns with Ora-Aid's semi-occlusive behavior, which creates a favorable microenvironment similar to advanced hydrocolloid dressings. Hydrocolloid mechanisms—including self-adhesion, moisture balance, and contamination protection—mirror the advantages observed with Ora-Aid in an intraoral context [24].

Emerging biomaterial research also supports the development of next-generation dressings capable of monitoring inflammation and responding dynamically to wound biology [25]. While Ora-Aid is a passive dressing, these studies illustrate the growing importance of intraoral biomaterials tailored to withstand moisture, mechanical forces, and microbial load. Ora-Aid's performance in this study reflects these design objectives: maintaining stability in the wet oral cavity, adhering reliably to mucosa, and reducing the likelihood of postoperative complications linked to clot disruption. Collectively, the findings of this study and the supporting literature emphasize that attachable intra-oral wound dressing tapes provide essential early protection that translates into reduced postoperative pain and enhanced socket healing. By stabilizing the clot, shielding the wound from irritation, and preserving moisture, Ora-Aid creates an optimal healing environment without requiring biologic activity. These advantages position it as a practical, cost-effective adjunct for routine extraction care, with potential benefits for patients at higher risk of pain or delayed healing.

Strengths of the study

A major strength of this study is its focused evaluation of a simple, low-cost intraoral wound dressing that can be easily integrated into routine clinical practice without the need for specialized materials or equipment. By incorporating both objective clinical parameters and patient-reported pain outcomes, the study provides a comprehensive assessment of the effectiveness of Ora-Aid in enhancing early socket healing. The use of standardized wound-healing indices and validated pain scales strengthens the reliability and reproducibility of the findings. Moreover, the direct comparison with conventional gauze-based postoperative care allows a clear demonstration of the added therapeutic value provided by the dressing. The emphasis on early postoperative evaluation captures the critical period of clot stabilization and epithelial initiation, where protective dressings exert their greatest benefit. The non-invasive and atraumatic nature of the intervention, along with the high likelihood of patient compliance due to comfort and ease of application, further enhances the clinical relevance of the results. Collectively, these strengths support the credibility and applicability of the study's conclusions within general dental practice.

Limitations

This study is limited by its short follow-up period, which restricts evaluation of long-term soft-tissue and bone healing. The sample size may not detect less common complications, and the absence of high-risk patient groups limits generalizability. Additionally, outcomes relied on clinical assessments without radiographic or biochemical evaluation, which may have provided deeper insights into healing dynamics.

Conclusion

The findings of this study indicate that the application of an attachable intra-oral wound dressing tape such as Ora-Aid provides significant benefits in the early postoperative period following tooth extraction. By offering stable coverage, maintaining moisture, and protecting the blood clot from mechanical irritation, the dressing effectively reduces Post operative bleeding, postoperative pain and promotes more favourable early soft-tissue healing compared with conventional gauze-based care. Its ease of application, patient comfort, and non-invasive nature further support its utility as a practical adjunct in routine dental practice. Although long-term effects and outcomes in high-risk populations require further investigation, the current results suggest that Ora-Aid represents a reliable, cost-effective option for enhancing immediate socket healing and improving the postoperative experience for patients undergoing dental extractions.

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