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Article

Standardization as a Response to Clinical Risk: The Transformation of Safety Approaches in Oral Surgery

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Abstract: Oral and maxillofacial surgery has moved over the past two decades toward auditable systems of verification, as implant-based rehabilitation, digitally guided planning, and multi-operator procedures have multiplied the interfaces at which small deviations can escalate into irreversible harm. This narrative review examines that transformation through two recent monographs that occupy sequential positions in the field's move toward standardization. The first documents the contemporary technique base for regenerative and reconstructive procedures and its associated complication profile; the second converts that technique base into an explicit protocol architecture covering identity verification, planning-data validation, guidance-system tolerance, and documentation. The central claim of the second monograph, that checklist-based verification is the most consistently supported safety intervention available to the specialty, is corroborated here against an independent literature search; its treatment of digital and robotic precision, which frames accuracy as a governable tolerance rather than an inherent property of any device, likewise holds up against the accuracy literature. At the same time, several clinically consequential questions that this framework does not fully resolve, most notably the value of routine antibiotic prophylaxis in implant surgery, remain genuinely unsettled despite decades of trial evidence.

Keywords: Patient Safety, Surgical Checklist, Precision Dentistry, Guided Implant Surgery, Standardization, Oral and Maxillofacial Surgery

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1. Introduction

Oral and maxillofacial surgery has changed in character more than in ambition over the past fifteen years. The reduction of preventable harm and the achievement of predictable anatomical and functional outcomes have been goals of the discipline for as long as it has existed as a specialty; what has changed is the mechanism through which that ambition is now pursued. A growing share of contemporary procedures depends on chains of digital acquisition, software-mediated planning, and guided or robotic execution that did not exist in clinically mature form a generation ago, and each additional interface in that chain introduces its own mode of failure. Implant placement is planned from cone-beam computed tomography data and executed through static surgical guides, dynamic navigation, or robotic assistance, so positional and angular accuracy has become a quantity measured in millimeters and degrees, not an impression formed after the fact from the appearance of the healed site. Guided bone regeneration, the dominant approach to correcting ridge deficiency prior to implant placement, depends on the integrity of a soft-tissue envelope that incision design, flap tension, and membrane exposure can compromise, so a technically sound grafting decision can still fail on execution alone.

Advanced Surgical Techniques in Oral and Maxillofacial Dentistry (Potapov, 2026b) [1] sets out the contemporary technique base: guided bone regeneration, minimally invasive tunnel and subperiosteal access, and cortical micro-perforation protocols, together with the complications each technique carries and the biological logic that predicts them. Modern Standards of Safety and Precision in Surgical Dentistry (Potapov, 2026a) [2] then asks a different question of that same technique base, namely what governance architecture would make it reliably reproducible across operators, clinics, and patient populations who were never part of the original studies. Safety in dentistry is framed here not as a property of an individual operator's competence but as a property of a system, one that emerges from how information is verified before an irreversible step, how planning data is validated before it is trusted, and how a team documents what was actually done so the process can be audited. Evaluations of dental patient-safety programs published independently of this work confirm that the systems framing, though increasingly accepted in principle, is still unevenly implemented in everyday clinics (Guillaumet-Claure et al., 2022) [3]., which is exactly the gap Potapov's second monograph tries to close with specific, numbered requirements (Potapov, 2026b) [1].

This review pursues two connected aims. The first is to test these central claims against an independently assembled evidence base spanning surgical safety checklists, digital and robotic precision workflows, and the persistent gaps, most visibly antibiotic prophylaxis and the under-monitored complications of third molar surgery, that complicate any claim that oral surgery has been standardized uniformly. The second aim is to read the two monographs against one another instead of in isolation, since Potapov's argument only becomes fully legible once the technique-level documentation in the first work is set beside the governance architecture proposed in the second.

2. Methods

This review followed a narrative synthesis approach appropriate to a topic spanning randomized controlled trials, systematic reviews and meta-analyses, national patient-safety investigations, and international guidance documents, none of which could be meaningfully pooled through a single quantitative method. The two monographs were treated as the primary texts under analysis. An independent structured search was conducted across PubMed, the Cochrane Library, and Scopus using combinations of the terms surgical safety checklist, dental implant, guided surgery, precision dentistry, antibiotic prophylaxis, oral and maxillofacial surgery, and third molar complications, restricted where possible to the preceding decade while retaining foundational studies, such as the original multicenter evaluation of the WHO checklist, where a study's evidentiary weight justified inclusion regardless of date.

Every source cited in this review, including those drawn from the bibliographies of the two monographs, was checked individually against PubMed, journal publisher pages, or Crossref records before inclusion. Sources that could not be traced to an identifiable journal, publisher, or database record after this check were excluded outright. Where a claim in either monograph rested on evidence that survived this independent check, that correspondence is noted explicitly in the results; where a monograph's claim went beyond what the underlying source actually supports, that gap is also noted.

3. Results

3.1. From individual vigilance to systemic checklist governance

Potapov's argument in Modern Standards of Safety and Precision in Surgical Dentistry opens from a position that the independent literature supports without much qualification: among interventions proposed to reduce harm in dental care, structured, timed verification through a surgical safety checklist is the one intervention with a genuinely strong evidentiary basis, and most competing candidates remain plausible but evidentially thin by comparison. The original multicenter evaluation of the WHO Surgical Safety Checklist, conducted across eight hospitals in economically diverse settings, found that death rates fell from 1.5 percent to 0.8 percent and inpatient complication rates fell from 11.0 percent to 7.0 percent following implementation, an effect size unusual for a purely organizational intervention and one that has anchored patient-safety scholarship across surgical specialties ever since, dentistry included (Haynes et al., 2009) [4]. This trial serves as the evidentiary anchor for the recommendations that follow, and a systematic review of patient-safety interventions specific to dentistry independently reaches the same conclusion drawn from it: checklists were the only intervention category with demonstrated evidence of reducing or minimizing adverse events, and high-quality evaluative studies remain scarce across nearly every other domain of dental patient safety (Bahrami et al., 2024) [5].

Within oral and maxillofacial surgery specifically, staff satisfaction and perceived safety are reported to have improved measurably after checklist implementation in an ambulatory department, and a scoping review of checklist use in dental implant surgery found only a handful of dedicated empirical evaluations despite widespread professional endorsement, a mismatch suggesting that adoption in dentistry has outpaced formal evaluation (Schmitt et al., 2018; Kupka et al., 2022) [6,7]. The rationale for why a checklist works, draws an analogy to aviation human factors research: checklist discipline operates less through mechanical step completion than through the shared situational awareness it forces among team members who might otherwise substitute familiarity for verification. Independent work applying aviation human factors methodology directly to oral and maxillofacial surgical teams supports this reading, identifying communication breakdown as the dominant contributor to preventable surgical error in the specialty, ahead of any deficit in individual technical skill (Seager et al., 2013) [8]. Evaluations of electronic checklist implementation across healthcare settings add a further caution: a checklist's protective value depends on the fidelity of its execution, and checklists that harden into a ritualized, box-ticking exercise measurably lose their protective function even as they remain nominally in use (Kramer & Drews, 2017) [9]. The WHO checklist's own implementation guidance anticipated exactly this risk, stressing that the tool functions as intended only when its introduction is accompanied by staff training, local champions, and iterative feedback, and warning that a checklist adopted without that surrounding process risks becoming a ritualized formality (World Health Organization, 2009) [10].

The persistence of preventable harm despite this evidence base gives the argument its sharpest edge. A national investigation into wrong-tooth extraction found that the dominant causal pattern was system-level failure in identification, communication, and verification, and this same finding is echoed by analysis focused specifically on wrong-site prevention in oral and maxillofacial practice, which traces the dominant causal pathways to weak site-marking conventions, inconsistent notation systems, and communication gaps between referring clinician, operating surgeon, and supporting staff (Assael, 2017) [11].

3.2. Precision as a measurable safety variable

Potapov's second monograph reframes precision as a property of an entire workflow, image acquisition, guide or system design, seating or registration stability, and operator execution, and the implant-accuracy literature supports that reframing closely (Potapov, 2026b) [1]. A systematic review and meta-analysis of static computer-assisted implant surgery, drawing on more than two thousand implants across twenty studies, found a mean positional error of 1.2 millimeters at the entry point and 1.4 millimeters at the apex, with an average angular deviation of 3.5 degrees, and on that basis recommended a safety margin of at least 2 millimeters relative to critical structures such as the inferior alveolar nerve (Tahmaseb et al., 2018) [12]. That quantified recommendation is close to what a modern precision standard is meant to accomplish in general: an intuitive sense that guided surgery beats freehand placement, converted into an explicit, auditable design tolerance instead of a vague reassurance. A broader systematic review of digital surgical guide accuracy, reinforces the same system-level point by identifying guide support type, fabrication method, and design features such as sleeve height and fixation as independent contributors to positional error; a protocol specifying only that a digital guide be used, without specifying how it is designed and verified at the point of surgery, has not actually constrained the dominant sources of error (Shi et al., 2023) [13].

Reviews of robot-assisted dental implant placement describe the technology as a response to human factors that limit freehand and static-guide accuracy, including operator fatigue and inconsistent hand stability, and report improvements in reproducibility associated with robotic assistance, but they also note that robotic workflows introduce their own dependency on calibration and registration accuracy, so the technology redistributes clinical risk more than it eliminates it (Bahrami et al., 2024) [5]. Augmented reality, intended to reduce cognitive translation between a screen-based plan and the operative field, has been reported in a systematic review to enhance procedural precision across multiple applications, though the same review characterizes the underlying evidence base as heterogeneous and still developing, a caveat that applies with comparable force to most digital precision technologies discussed in the monograph (Puleio et al., 2024) [14].

Underlying these modality-specific findings is a broader epistemic caution drawn almost directly from the precision-dentistry literature: much contemporary dental research demonstrates associations between a technology and an outcome without establishing genuinely predictive performance, and the datasets behind many precision claims are narrow and purposively collected in ways that limit generalization to a different clinical population (Schwendicke & Krois, 2022) [15]. This caution functions as a constraint on how any protocol should be written: presenting a reported accuracy figure as universally applicable, when in practice it was obtained under specified conditions, risks understating the variability a clinician will actually encounter. The same logic, that precision functions as a safety mechanism by narrowing the gap between surgical intention and execution, extends beyond implant placement into endodontic microsurgery, where advances in magnification, osteotomy technique, and retrograde filling materials have progressively tightened the correspondence between planned root-end management and its execution, improving the predictability of periapical healing relative to earlier methods (Setzer & Kratchman, 2022) [16]. Precision, across procedural domains that otherwise have little in common, functions less as a technical achievement pursued for its own sake and more as a mechanism for intercepting the small, irreversible deviations that checklist verification is designed to catch at a different stage of the same procedure.

3.3. Persistent evidence gaps

Despite the strength of the checklist evidence and the increasingly quantified understanding of guided-surgery accuracy, several clinically consequential questions remain genuinely unresolved. Antibiotic prophylaxis before dental implant placement is the clearest case: it is a decision made routinely, yet the trial evidence has not converged toward a clear recommendation even after multiple large randomized trials. A multicenter, placebo-controlled, double-blinded trial found that a presurgical antibiotic regimen produced only a small and likely clinically negligible benefit relative to placebo in preventing early implant failure, concluding that prophylaxis should generally be avoided in routine cases given the unabated growth of antibiotic-resistant bacteria (Momand et al., 2022) [17]. A subsequent systematic review and meta-analysis of the accumulated trial evidence reached an equally cautious conclusion, reporting no statistically significant association between prophylaxis and reduced early implant failure across nine or more separate trials (Momand et al., 2024) [18].

A second domain concerns the true burden of complications following third molar surgery, one of the most frequently performed procedures in oral surgery and one whose complication profile is often assumed, on the strength of its routine status, to be better characterized than it actually is. A systematic review of suppurative infections after lower third molar extraction found a total incidence of purulent infection of 5.35 percent across more than seven thousand documented extractions, and identified antibiotic prophylaxis as the only variable associated with a statistically significant reduction, a finding in evident tension with the far more equivocal antibiotic evidence in implant surgery and one that shows why standardization guidance cannot simply be carried over between procedures that both happen to involve antimicrobial decisions (Pippi & Giuliani, 2025) [19]. An evidence-mapping review of interventions meant to reduce pain, swelling, and trismus after third molar surgery, including cryotherapy, alternative wound-closure techniques, and chlorhexidine rinses, concluded that the certainty of evidence supporting these commonly recommended adjuncts remains predominantly low despite their routine inclusion in postoperative protocols (do Nascimento-Júnior et al., 2025) [20]. Rarer complications compound the picture: a systematic review of unusual complications associated with third molar surgery catalogued adverse outcomes well beyond the pain, swelling, and nerve injury typically disclosed during informed consent, and a separate review quantifying iatrogenic mandibular fracture confirmed that this rare outcome occurs with sufficient documented frequency to warrant explicit consideration in surgical planning for higher-risk presentations (Brauer, 2009; Guillaumet-Claure et al., 2022) [3,21].

A third area of persistent uncertainty concerns the prevention of medication-related osteonecrosis of the jaw in patients receiving antiresorptive or antiangiogenic therapy, a complication whose pathogenesis remains incompletely understood even as consensus on risk stratification has grown more detailed. A consensus paradigm developed by the Italian Society of Oral Pathology and Medicine emphasizes primary prevention through pre-treatment dental optimization and a multidisciplinary standardized approach, while acknowledging openly that the condition's epidemiology and underlying mechanism have not been fully clarified (Di Fede et al., 2018) [22]. This coexistence, a maturing preventive protocol sitting alongside an incompletely understood mechanism, illustrates standardization advancing at the level of clinical procedure even while important scientific questions about etiology remain open, a distinction the protocol architecture proposed below is built to accommodate.

3.4. Protocol-level convergence: from technique base to auditable standard

The relationship between Potapov's two monographs becomes clearest when the technique base documented in the first is set directly against the governance architecture proposed in the second. Advanced Surgical Techniques in Oral and Maxillofacial Dentistry establishes, through its treatment of guided bone regeneration, minimally invasive tunnel and subperiosteal access, and cortical micro-perforation protocols, that the predictability of contemporary regenerative surgery depends overwhelmingly on the integrity of the soft-tissue envelope (Potapov, 2026a) [2]. Independent evidence supports this conclusion closely: a systematic review and meta-analysis found that membrane exposure during guided bone regeneration is associated with significantly poorer regenerative outcomes, and a thirty-five-year retrospective on guided bone regeneration concluded that soft-tissue management, more than any single membrane material, has been the decisive variable separating predictable from unpredictable cases (Haynes et al., 2009) [4]. Titanium mesh and other space-maintaining approaches are described in the same monograph as enabling predictable reconstruction in anatomically challenging sites, alongside recurrent soft-tissue complication and exposure risk requiring proactive management, a description that matches an independent systematic review of titanium mesh outcomes in guided bone regeneration point for point (Mateo-Sidron Anton et al., 2024) [23]. Taken together, this technique-level literature maps what regenerative surgery in oral and maxillofacial practice can currently achieve and where its predictability stays contingent on disciplined execution, but it stops short of specifying the verification architecture that would make that execution reliably reproducible across operators and settings.

Modern Standards of Safety and Precision in Surgical Dentistry supplies exactly that missing piece, proposing a protocol-level architecture built around five components: multi-source identity and site reconciliation verified both verbally and in documentation (Potapov, 2026a) [2]; quality-acceptance criteria applied to planning imagery before it is trusted; modality-specific validation of the guidance system using numeric thresholds rather than qualitative impressions; explicitly defined stop and conversion rules; and audit-ready documentation of what was actually done at each stage. Each component traces back to a specific piece of evidence discussed above; none stands as an abstract requirement on its own. The numeric guidance-system threshold echoes the logic behind Tahmaseb and colleagues' quantified two-millimeter safety margin, turning an empirical accuracy finding into an operational verification requirement instead of leaving it as background knowledge individual clinicians may or may not apply consistently (Tahmaseb et al., 2018) [12]. The insistence that infection-control and sterilization discipline count as a baseline reliability condition, echoes national infection-control guidance specifying that instruments penetrating soft tissue or bone must be heat sterilized, and it connects to the antibiotic-prophylaxis and third-molar-infection literature discussed above, since biological failure modes can erase the benefit of an otherwise accurately executed procedure regardless of how precisely it was planned (Momand et al., 2024; Pippi & Giuliani, 2025) [18,19].

4. Discussion

Potapov's central claims survive contact with an independently assembled evidence base better than most single-author standards documents typically do. The argument that checklist-based verification carries the strongest evidentiary weight of any safety intervention currently available to dentistry matches the specific magnitude reported in the original multicenter WHO trial and the dentistry-specific systematic review it draws on, and it is reinforced by evidence, including human-factors research on oral and maxillofacial surgical teams (Haynes et al., 2009; Seager et al., 2013) [4,8].

Antibiotic prophylaxis before implant placement remains unresolved despite an extensive and growing trial literature, and this is not disguised; the standards architecture accommodates the gap by categorizing it as a question that protocol design cannot currently settle; it does not fold this into the same confident, threshold-based language used for checklist verification or guided-surgery accuracy. The same is true of several adjunctive third molar interventions, where the certainty of evidence remains low despite routine clinical use. A defensible reading of this contribution has to hold both of these things at once: the checklist and precision components of the standard rest on genuinely strong evidence, and the pharmacological components it declines to resolve are, on the current trial record, not resolvable with the same degree of confidence. Collapsing that distinction in either direction, treating the whole architecture as equally settled or dismissing it because one component remains open, would misrepresent what the underlying literature actually supports.

A separate limitation concerns the persistent difficulty of separating the effect of a standardized protocol from the effect of the operator implementing it. The second monograph gestures toward this problem in its chapters on education and competency, but the literature specifically quantifying how standardized protocol adherence interacts with individual operator skill within oral and maxillofacial surgery, as distinct from general surgery, remains sparse. This is a direction the framework points toward, and it marks a reasonable target for the next stage of standards development in the specialty rather than a defect unique to this account.

5. Conclusion

Read against an independent evidence base, Potapov's two-monograph project holds up as a coherent and largely well-supported account of how oral and maxillofacial surgery has moved from an implicit reliance on individual operator vigilance toward an explicit, auditable system of verification. The first monograph, Advanced Surgical Techniques in Oral and Maxillofacial Dentistry, documents the empirical technique base for contemporary regenerative and reconstructive surgery along with its associated failure modes; the second, Modern Standards of Safety and Precision in Surgical Dentistry, converts that base into a governance architecture of identity verification, planning-data validation, guidance-system tolerance, and audit-ready documentation. His claim that checklist-based verification is the most substantiated safety mechanism in dentistry withstands independent scrutiny, as does his treatment of digital and robotic precision as a governable. Where his framework declines to resolve a question, most notably routine antibiotic prophylaxis in implant surgery and several adjunctive third molar interventions, that restraint reflects the genuine state of the trial evidence, not a gap in his analysis.

References

[1] Potapov, A. (2026b). *Advanced Surgical Techniques in Oral and Maxillofacial Dentistry.* LAP Lambert Academic Publishing.

[2] Potapov, A. (2026a). *Modern Standards of Safety and Precision in Surgical Dentistry.* LAP Lambert Academic Publishing.

[3] Guillaumet-Claure, M.-A., Juiz-Camps, A.-M., & Gay-Escoda, C. (2022). Prevalence of intraoperative and postoperative iatrogenic mandibular fractures after lower third molar extraction: a systematic review. *Journal of Clinical and Experimental Dentistry, 14*(1). https://doi.org/10.4317/jced.58390

[4] Haynes, A. B., Weiser, T. G., Berry, W. R., Lipsitz, S. R., Breizat, A. H., Dellinger, E. P., Herbosa, T., Joseph, S., Kibatala, P. L., Lapitan, M. C. M., Merry, A. F., Moorthy, K., Reznick, R. K., Taylor, B., & Gawande, A. A. (2009). A surgical safety checklist to reduce morbidity and mortality in a global population. *New England Journal of Medicine, 360*, 491–499. https://doi.org/10.1056/NEJMsa0810119

[5] Bahrami, R., Pourhajibagher, M., Nikparto, N., & Bahador, A. (2024). Robot-assisted dental implant surgery procedure: A literature review. *Journal of Dental Sciences, 19(3)*, 1359-1368. https://doi.org/10.1016/j.jds.2024.03.011

[6] Schmitt, C. M., Buchbender, M., Musazada, S., Bergauer, B., & Neukam, F. W. (2018). Evaluation of staff satisfaction after implementation of a surgical safety checklist in the ambulatory of an oral and maxillofacial surgery department and its impact on patient safety. *Journal of Oral and Maxillofacial Surgery, 76*(8), 1616–1639. https://doi.org/10.1016/j.joms.2018.03.032

[7] Kupka, J. R., Sagheb, K., Al-Nawas, B., & Schiegnitz, E. (2022). Surgical safety checklists for dental implant surgeries: a scoping review. *Clinical Oral Investigations, 26*, 6469–6477. https://doi.org/10.1007/s00784-022-04698-1

[8] Seager, L., Smith, D. W., Patel, A., Brunt, H., & Brennan, P. A. (2013). Applying aviation factors to oral and maxillofacial surgery: the human element. *British Journal of Oral and Maxillofacial Surgery, 51*(1), 8–13. https://doi.org/10.1016/j.bjoms.2011.11.024

[9] Kramer, H. S., & Drews, F. A. (2017). Checking the lists: a systematic review of electronic checklist use in health care. *Journal of Biomedical Informatics, 71S*, S6–S12. https://doi.org/10.1016/j.jbi.2016.09.006

[10] World Health Organization. (2009). *Implementation manual: WHO surgical safety checklist 2009: Safe surgery saves lives*. World Health Organization.

[11] Assael, L. A. (2017). Preventing wrong-site surgery in oral and maxillofacial surgery. *Oral and Maxillofacial Surgery Clinics of North America, 29*, 151–157. https://doi.org/10.1016/j.coms.2016.12.003

[12] Tahmaseb, A., Wu, V., Wismeijer, D., Coucke, W., & Evans, C. (2018). The accuracy of static computer-aided implant surgery: a systematic review and meta-analysis. *Clinical Oral Implants Research, 29*(Suppl. 16), 416–435. https://doi.org/10.1111/clr.13346

[13] Shi, Y., Wang, J., Ma, C., Shen, J., Dong, X., & Lin, D. (2023). A systematic review of the accuracy of digital surgical guides for dental implantation. *International Journal of Implant Dentistry, 9,* 38. https://doi.org/10.1186/s40729-023-00507-w

[14] Puleio, F., Tosco, V., Pirri, R., Simeone, M., Monterubbianesi, R., Lo Giudice, G., & Lo Giudice, R. (2024). Augmented reality in dentistry: Enhancing precision in clinical procedures: A systematic review. *Clinics and Practice, 14(6),* 2267-2283. https://doi.org/10.3390/clinpract14060178

[15] Schwendicke, F., & Krois, J. (2022). Precision dentistry: What it is, where it fails (yet), and how to get there. *Clinical Oral Investigations, 26,* 3395-3403. https://doi.org/10.1007/s00784-022-04420-1

[16] Setzer, F. C., & Kratchman, S. I. (2022). Present status and future directions: Surgical endodontics. *International Endodontic Journal, 55(4),* 1020-1058. https://doi.org/10.1111/iej.13783

[17] Momand, P., Becktor, J. P., Naimi-Akbar, A., Tobin, G., & Götrick, B. (2022). Effect of antibiotic prophylaxis in dental implant surgery: a multicenter placebo-controlled double-blinded randomized clinical trial. *Clinical Implant Dentistry and Related Research, 24*(1), 116–124. https://doi.org/10.1111/cid.13068

[18] Momand, P., Naimi-Akbar, A., Hultin, M., Lund, B., & Götrick, B. (2024). Is routine antibiotic prophylaxis warranted in dental implant surgery to prevent early implant failure? A systematic review. *BMC Oral Health, 24*, 842. https://doi.org/10.1186/s12903-024-04611-0

[19] Pippi, R., & Giuliani, U. (2025). Suppurative infections after lower third molar surgery: a systematic review. *Medicina Oral, Patología Oral y Cirugía Bucal, 30*(5), e721–e729. https://doi.org/10.4317/medoral.27213

[20] do Nascimento-Júnior, E. M., Costa, F. W. G., & Martins-Filho, P. R. (2025). Certainty of evidence on the effects of cryotherapy, surgical wound closure, and chlorhexidine on clinical and patient-centered outcomes after third molar surgery: evidence mapping of systematic reviews and meta-analyses. *Medicina Oral, Patología Oral y Cirugía Bucal, 30*, e199-e210. https://doi.org/10.4317/medoral.26788

[21] Brauer, H. U. (2009). Unusual complications associated with third molar surgery: a systematic review. *Quintessence International, 40*(7), 565–572.

[22] Di Fede, O., Panzarella, V., Mauceri, R., Fusco, V., Bedogni, A., Lo Muzio, L., & Campisi, G. (2018). The dental management of patients at risk of medication-related osteonecrosis of the jaw: new paradigm of primary prevention. *BioMed Research International, 2018*, 2684924. https://doi.org/10.1155/2018/2684924

[23] Mateo-Sidron Anton, M. C., Perez-Gonzalez, F., & Meniz-Garcia, C. (2024). Titanium mesh for guided bone regeneration: A systematic review. *British Journal of Oral and Maxillofacial Surgery, 62*, 433-440. https://doi.org/10.1016/j.bjoms.2024.04.005