

Research Article

## Aspirin and Dental Extractions: Still A Myth?

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### ABSTRACT

Anti-platelet therapy is indicated for patients with thromboembolic diseases such as Myocardial infarction, Diabetes, Angina etc. It is not uncommon for such patients to present with dental problems requiring extraction. Continuing anti-platelet therapy during surgical procedures increases the risk of hemorrhage while discontinuing increases the risk of life threatening thromboembolic events. This article aims in evaluating the need to stop aspirin prior to dental extraction.

**Key words:** Aspirin, Dental Extraction, Anti-platelet therapy, Thromboembolism

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### INTRODUCTION

Cardio-vascular diseases account for the highest mortality and morbidity worldwide<sup>1</sup>. With increasing awareness and health consciousness, there is a striking decrease of cardiovascular mortality with the introduction of preventive and maintenance antiplatelet therapy<sup>1</sup>. Acetyl Salicylic Acid (ASA), generically known as Aspirin, was developed in 1897 and is one of the world's safest and cheaper drugs with proven efficiency for over 100 years<sup>2</sup>. It is used clinically as analgesic, anti-pyretic, anti-inflammatory agents and as a medication to prevent platelet aggregation<sup>3</sup>. Aspirin affects clotting by inhibiting platelet aggregation but they do so by a variety of different mechanisms. Aspirin irreversibly acetylates cyclooxygenase, inhibiting the production of thromboxane A<sub>2</sub>. This results in decreased platelet aggregation by adenosine diphosphatase and collagen<sup>4</sup>. It interferes with platelet function and lasts for the lifetime of the platelet, approximately, 8-11 days<sup>5</sup>. There is considerable conflicting opinion regarding the exact time of stopping aspirin prior to invasive surgical procedure. Various authors recommended stopping aspirin pre operatively. The timing to stop aspirin ranges between 24 hours to 7-10 days. On the contrary, some authors recommended not stopping aspirin pre operatively<sup>6</sup>.

### MATERIALS AND METHODS

**Aims & Objectives:** To evaluate the need to stop Aspirin therapy prior to dental extraction.

**Search Strategy:** A systematic search of literature was done using the PubMed Database, MEDICAL Subject Headings using keywords: "Aspirin and Dental extraction" and 84 articles were reported. Following inclusion and exclusion criteria was then devised to meet the above said aims and objectives.

**Inclusion criteria:** Clinical trials involving dental extractions in patients under aspirin therapy.

**Exclusion criteria:** Clinical trials involving dental extractions in patients under anti-platelet therapy other than aspirin.

Based on the above mentioned criteria, 17 articles were selected and were reviewed for selecting appropriate clinical trials.

### RESULTS AND DISCUSSION

Literature review reveals that clinical trials involving dental extraction and anti platelet therapy started in 1970 and it is still going on. Studies conducted in 1970s by Lemkin et al<sup>6</sup> and Mc Gaul et al<sup>24</sup> have documented that there is increased postoperative bleeding after dental extraction and recommended to discontinue aspirin<sup>25</sup>. Few authors recommended stopping aspirin 7 days preoperatively<sup>26, 27</sup>. Sonis et al further stated that only the production of newer platelets will be able to overcome the inhibiting effect of aspirin<sup>27</sup>. Few other authors recommended stopping aspirin for 3 days or lesser than that<sup>28, 29, 30</sup>. The rationale for such recommendation is that, after 3 days of interruption of aspirin, sufficient number of newer platelets will be present in the circulation for effective hemostasis<sup>28, 31</sup>. On the other hand, there are various authors who recommended not stopping aspirin therapy prior to dental extraction<sup>8-23</sup>. There is no indication to stop aspirin therapy prior to invasive dental procedures as any postoperative bleeding if present can be easily managed by local hemostatic measures<sup>32</sup>. Oral hemostatic measures can be taken to control bleeding after tooth extraction by suturing the socket and by packing gauze bite firmly for 15-30 minutes<sup>33</sup>. Resorbable gelatin sponge, oxidized cellulose, microfibrillar collagen can also be used. If still bleeds, tranexamic acid can be applied topically<sup>34</sup>. There are also several other factors that needs to be assessed in patients undergoing anti platelet therapy prior to invasive surgical procedure such as patient's inherent risk factors for bleeding, invasive potential of the surgical procedure, and potential risk of thromboembolic

event if antiplatelet therapy is stopped<sup>35</sup>. Therefore, it is advised that a dental clinician should take into consideration all the above said factors before decision making. It is also advised to take physician's opinion before the surgical procedure. The results have been tabulated in table 1.

## CONCLUSION

It is recommended that the patients need not stop aspirin therapy prior to dental extraction when the event of hemorrhagic risk is less likely and when hemorrhage can be easily managed by local hemostatic measures.

Table 1: Clinical trials involving aspirin therapy and dental extraction

S. No	Year	Journal	Sample size	Results	Remarks	
1.	1970	Oral Surg Med Oral Pathol	Oral Pathol	Data not available	Increased post-operative bleeding after dental extraction due to Aspirin. <sup>7</sup>	Discontinue Aspirin therapy prior to dental extraction.
2.	1999	Harefuah		N=50	Although bleeding time was significantly longer when aspirin was continued, it was within normal limits for control and test groups <sup>8</sup> .	Discontinuing low-dose aspirin prior to elective oral surgery is not justified.
3.	2005	J Oral Surg	Maxillofac Surg	N=51	There was no excessive intraoperative bleeding in all cases except 1 <sup>9</sup> .	Not necessary to stop aspirin therapy.
4.	2006	Mund Gesichtscir	Kiefer	N=317; 65 patients under medication and 252 healthy patients	The post-operative bleeding frequency as 1.54% in the ASA group and 1.59% in the healthy group. No serious or uncontrollable postoperative bleedings arose in either group <sup>10</sup> .	Not necessary to interrupt the medication of low dose aspirin.
5.	2007	Revue de Stomatologie et de Chirurgie Maxillo-Faciale		N=52	Only one patient reported with continuous bleeding which required additional local hemostatic measure <sup>11</sup> .	Hemorrhagic risk in patients on aspirin therapy can be managed by local hemostasis protocol.
6.	2008	Journal of Oral and Maxillofacial Surgery		N=82; Patients taking aspirin (n=32), Patients who stopped aspirin pre-operatively (n=25), and in healthy patients (n=25).	No patient in any group had any episode of prolonged or significant bleeding from the extraction sites <sup>12</sup> .	Routine dental extraction can be safely performed in patients on long term aspirin therapy.
7.	2009	The Saudi Dental Journal		N=189	Patients who received Aspirin and underwent surgical extraction showed bleeding after 24h <sup>13</sup> .	Subjects who received 81mg ASA daily could undergo dental extraction without bleeding risks.
8.	2009	J Am Dent Assoc		N=43	There were no documented episodes of prolonged postoperative bleeding <sup>14</sup> .	No need to stop aspirin therapy.
9.	2009	Medicina Oral, Patologia Oral y Cirugia Bucal		N=155	Local measures to achieve hemostasis are sufficient to control postoperative hemorrhage after tooth extraction <sup>15</sup>	No need for interruption of aspirin therapy.
10.	2010	Biotechnology and biotechnological Equipment		N=44	There was no statistically significant difference between control group and experimental group with respect to post-operative bleeding <sup>16</sup> .	No need for interruption of long term aspirin therapy prior to dental extraction.
11.	2011	J Oral Surg	Maxillofac Surg	N=63	There was no difference in the amount of bleeding that occurred during tooth extraction	No need to stop aspirin therapy

				between patients who continued ASA therapy versus patients who suspended their ASA therapy <sup>17</sup> .	
12.	2011	The American Journal of Cardiology	N=643	Compared to controls the risk of prolonged immediate bleeding was higher in patients on dual antiplatelet therapy than on aspirin alone <sup>18</sup> .	Dental extractions can be safely performed in patients receiving single or dual antiplatelet therapy when appropriate local hemostatic measures are taken.
13.	2012	J Am Dent Assoc	N=213	No statistical significance in postoperative bleeding between the groups was observed <sup>19</sup> .	Tooth extractions can be safely performed while patients continue to receive combined anticoagulant - aspirin therapy
14.	2012	Pakistan Oral and Dental Journal	N=254	No statistical significance in postoperative bleeding between the groups was observed <sup>20</sup> .	It is a safe practice to perform simple extraction of 1 tooth in patients taking 75-150mg aspirin daily.
15.	2013	Int J Dent Sci Res	N=90	None of the patients exhibited any excessive bleeding intraoperatively or immediately post-operatively <sup>21</sup> .	Single tooth extraction by intra alveolar method in patient on continued aspirin therapy is a safe procedure.
16.	2013	Zhonghua Kou Qiang Yi Xue Za Zhi	N=600	Continuation of aspirin has no influence on post-operative bleeding <sup>22</sup> .	There was no indication to discontinue aspirin for the elderly before a single non-impacted tooth extraction.
17.	2014	J Int Soc Prevent Communit Dent	N=200	In both control and experimental group bleeding and clotting times remained within normal limits <sup>23</sup> .	There is absolutely no need to discontinue antiplatelet therapy for any ambulatory dental procedure.

## REFERENCES

- Collet JP, Montalescot G. Premature withdrawal and alternative therapies to dual oral antiplatelet THERAPY. *Eur Heart J* 2006;8:46-52.
- Kumar AJ, Kumari MM, Arora N, Haritha A. Is antiplatelet therapy interruption a real clinical issue? Its implications in dentistry and particularly in periodontics. *Journal of Indian Society of Periodontology* 2009;13(3):121-125.
- Nasser Nooh. The effect of aspirin on bleeding after extraction of teeth. *The Saudi Dental Journal* 2009;21:57-61
- Merritt JC, Bhatt DL. The efficacy and safety of perioperative antiplatelet therapy. *J Thromb Thrombolysis* 2002;13:97-103.
- Vane JR, Anggard EE, Botting RM. Regulatory functions of the vascular endothelium. *N Eng J Med* 1990;323:27-36.
- Gaurav Verma. Dental Extraction Can Be Performed Safely in Patients on Aspirin Therapy: A Timely Reminder. *ISRN Dent* 2014; 2014:463684.
- Lemkin SR, Billesdon JE, Davee JS, Leake DL, Kattlove HE. Aspirin-induced oral bleeding: correction with platelet transfusion. A reminder. *Oral Surg Oral Med Oral Pathol* 1974;37:498-501.
- Gaspar R, Ardekian L, Brenner B, Peled M, Laufer D. Ambulatory oral procedures in patients on low-dose aspirin. *Harefuah* 1999;136(2):108-10,175.
- Madan GA, Madan SG, Madan G, Madan AD. Minor Oral Surgery without stopping daily low-dose aspirin therapy: a study of 51 patients. *J Oral Maxillofac Surg* 2005;63(9):1262-5.
- Hemelik M, Wahl G, Kessler B. Tooth extraction under medication with acetylsalicylic acid. *Mund Kiefer Gesichtschir* 2006;10(1):3-6.
- Garnier J, Truchot J, Quero et al. Antiagregant plaquettaire et chirurgie buccale: a propos de 218 extractions dentaires. *Revue de Stomatologie et de Chirurgie Maxillo-Faciale* 2007;108(5):407-410
- Krishnan B, Shenoy NA, Alexander M. Exodontia and antiplatelet therapy. *J Oral Maxillofac Surg* 2008;66(10):2063-6.
- Nasser Nooh. The effect of aspirin on bleeding after extraction of teeth. *The Saudi Dental Journal* 2009;21:57-61.
- Napenas JJ, Hong CHL, Brennan MT, Furney SL, Fox PC, Lockhart PB. The frequency of bleeding complications after invasive dental treatment in patients receiving single and dual antiplatelet therapy. *Journal of the American Dental Association* 2009;140(6):690-695.

15. Cardona-Tortajada F, Sainz-Gomez E, Figureido-Garmendia J et al. Dental extractions in patients on antiplatelet therapy. A study conducted by the Oral Health Department of the Navarre Health Service (Spain). *Medicina Oral, Patologia Oral y Cirugia Bucal* 2009;14(11):588-592
16. Duygu G, Ozcakir-Tomruk C, Guler N, Sencift K. Assessment of effects of antiplatelet drugs on bleeding risk after teeth extractions. *Biotechnology and Biotechnological Equipment* 2010;24(3):2040-2043
17. Medeiros FB, de Andrade AC, Angelis GA, Conrado VC, Timerman L, Farsky P, Dibb L. Bleeding evaluation during single tooth extraction in patients with coronary artery disease and acetylsalicylic acid therapy suspension: a prospective, double-blinded, and randomized study. *J Oral Maxillofac Surg* 2011;69(12):2949-55.
18. Theodoros Lillis, Antonios Ziakas, Konstantinos Koskinas, Anastasios Tsirlis, George Giannoglou. *The American Journal of Cardiology* 2011;108(7):964-967
19. Bajkin BV, Bajkin IA, Petrovic BB. The effects of combined oral anticoagulant-aspirin therapy in patients undergoing extractions: a prospective study. *J Am Dent Assoc* 2012;143(7):771-6
20. Shah A, Shah ST, Shah I, Zia-Ur-Rehman. Post extraction bleeding associated with long term maintenance dose of aspirin 75-150mg. *Pakistan Oral and Dental Journal* 2012;32(2):199-202.
21. Verma G, Tiwari K, Chopra S. Aspirin and exodontias: a comparative study of bleeding complications with aspirin therapy. *International Journal of Dental Science and Research* 2013;1(2):50-53.
22. Wang WY, Cui NH, Wang EB, Zhang W. Clinical evaluation of influence of aspirin on post-operative bleeding after tooth extraction in the elderly. *Zhonghua Kou Qiang Yi Xue Za Zhi* 2013;48(5):262-5.
23. Darawade DA, Kumar S, Desai K, Hasan B, Mansata AV. Influence of aspirin on post-extraction bleeding - A clinical study. *J Int Soc Prevent Communit Dent* 2014; Suppl S1:63-7.
24. McGaul T. Postoperative bleeding caused by aspirin. *J Dent* 1978;6:207-9
25. Madhulaxmi M, Abdul Wahab PU. Can Aspirin be continued during dental extraction?. *International Journal of Pharmacy and Pharmaceutical Sciences* 2014;6(1):20-23
26. Daniel NG, Goulet J, Bergeron M, Paquin R, Landry PE. Antiplatelet drugs: is there a surgical risk?. *Journal of the Canadian Dental Association* 2002;68(11):683-687.
27. Sonis ST, Fazio RC, Fang et al. *Principios e Practica de Medicina Oral*, 2<sup>nd</sup> edition, Guanabara Koogan, Rio de Janeiro, Brazil, 1996.
28. Wahl MJ. Myths of dental surgery in patients receiving anticoagulant therapy. *The Journal of American dental Association* 2000;131(1):77-81.
29. Ferrari E, Benhamou M, Cerboni P, Marcel B. Coronary syndrome following aspirin withdrawal: a special risk for late stent thrombosis. *Journal of the American College of Cardiology* 2005;45(3):456-459.
30. Medeiros PJ, Miranda MS, Ribeiro et al. *Cirurgia dos Dentes Inclusos*, 1<sup>st</sup> edition, Santos, Sao Paulo, Brazil, 2003.
31. Little JW, Miller CS, Henry RG, McIntosh BA. Antithrombotic agents: implications in dentistry. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontics* 2002;93(5):544-551.
32. Badal S, Ahmed R, Shrikhanthan R, Badal A. Continuing antiplatelet therapy throughout dental procedures: a clinical dilemma. *Journal of Interdisciplinary Dentistry* 2012;2(1):15-19.
33. Bick RL. Alterations of hemostasis associated with cardiopulmonary bypass: pathophysiology, prevention, diagnosis, and management. *Semin Thromb Hemost* 1976;3(2):59-82.
34. Mariele Pototski, Jose M. Amenabar. Dental management of patients receiving anticoagulation or antiplatelet treatment. *Journal of Oral Science* 2007;49(4):253-258.
35. Bertrand ME. When and how to discontinue antiplatelet therapy. *European Heart Journal Supplements* 2008;10:A35-A41