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Metro South Health

Is Aspirin Appropriate for VTE Prophylaxis after Orthopaedic Surgery? The Risk of Aspirin Resistance

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Introduction

- Total hip and knee replacements (THR/TKR) have the highest risk of venous thromboembolisms (VTE)

- Aspirin is used for VTE prophylaxis after THR/TKR but the safety and efficacy is unknown, especially in higher risk patients

- Aspirin resistance (AR) increases morbidity and mortality in cardiovascular and neurovascular diseases but has not been investigated in orthopaedics

Aim

The study aims to describe the pathophysiology of AR and highlight the potential risk factors after THR/TKR

Methods

A comprehensive narrative synthesis on aspirin resistance in orthopaedic surgery from PubMed and EMASE databases.

Results

- Main causes of AR include increases in: isoprostane production/concentration, platelet turnover, esterase production/concentration, and inflammation

Table 1: Relationship between AR Risk factors and physiological changes

	Isoprostane production / concentration	Platelet turnover	Esterase production or concentration	Inflammation state
Elderly	↑	-	↓	-
Diabetes	↑	↑	↑	↑
Lipidemia	↑	↑	↑	↑
Obesity	↑	↑	↑	↑

Results (cont.)

- Some major risk factors include: age, diabetes, dyslipidaemia and obesity

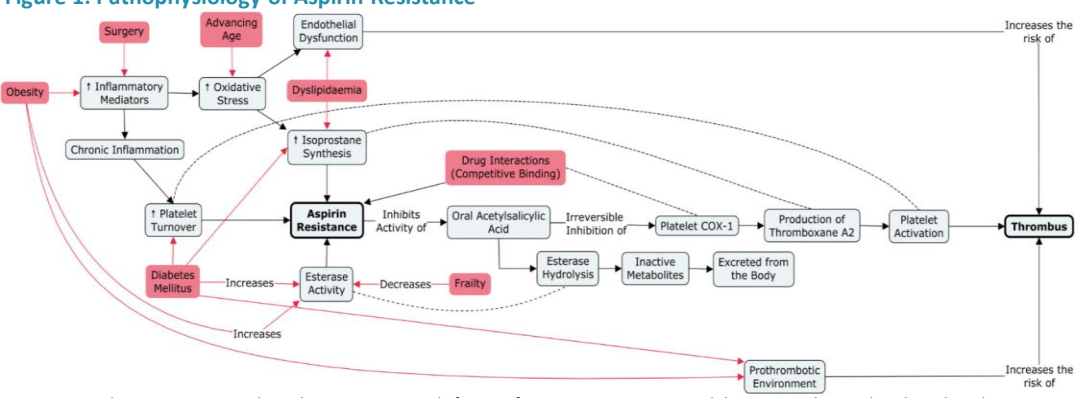
- The relationship between risk factors of AR and the physiological changes are displayed in Table 1

- The pathophysiology of AR is displayed in Figure1

Conclusion

Patients undergoing THR/TKR are at a theoretical risk of AR which is hypothesised to lead to increased thrombotic events. Future research is required to quantify AR post-THR/TKR and what are the clinical implications if resistant.

Figure 1: Pathophysiology of Aspirin Resistance



COX-1 Cyclooxygenase-1. *Red markers represent risk factors for aspirin resistance. Solid-arrows indicate the clinical pathway, where dashed-lines link causes of aspirin resistance to the pharmacokinetic/pharmacodynamics pathway of aspirin.*

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to learn more read: van Oosterom *et al.* Drugs (2020)

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