



General considerations and optimal timing for joint replacement in the elderly.

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General considerations ^[1]

General physical health

Decreased physiological reserves

Increased medical comorbidities

Pharmacotherapy

Intensive Care Unit

¹Blake E. Peterson, Aneel Jiwanlal, Gregory J. Della Rocca, and Brett D. Crist Orthopedic Trauma and Aging: It Isn't Just About Mortality *Geriatric Orthopaedic Surgery & Rehabilitation* March 2015 6: 33-36, first published on January 5, 2015 doi:10.1177/2151458514565663

Appropriate time – when to operate?

How to proceed when operative treatment is the only one solution?

Universal consent – necessity of early surgery.

Preoperative procedure, additional tests – major factors delaying operative treatment.

How to define early surgery?

Early surgery

Benefits

- Early postoperative rehabilitation
- Shortening of adverse immobilization
- Shorter hospitalization

Threats

- No possibility to fully stabilize overall physical health
- No time to modify treatment - discontinuation of drugs influencing coagulation

✓ better results?

✓ decreased mortality?

What do the studies say?

EBM – some facts

Early vs delayed surgery [2]

	Early (< 5 days)	Delayed (> 5 days)
survival time	longer	
quality of life	better	
activities of daily living (ADL) scores	higher	
mortality rates on post-operative 1st and 12th month		higher
total hospitalization time		longer
recovery of weight bearing ability		longer

² The effect of the timing of hip fracture surgery on the activity of daily living and mortality in elderly Doruk, Hüseyin et al. Archives of Gerontology and Geriatrics , Volume 39 , Issue 2 , 179 – 185

Early vs delayed surgery ^[3]

	Early (< 24h)	Delayed (>24h)
inpatient mortality rate	no significant difference *	
total hospitalization time	no significant difference	
functional outcome	better	

* In the early group, men with co-morbidity, dementia, and abnormal laboratory values upon admission showed a significantly higher mortality rate.

Early vs delayed surgery [4]

	Early (< 2 days)	Delayed (>5 days)
bleeding		no significant difference
perioperative blood transfusions		no significant difference

In this study early surgery has similar clinical outcomes to the delayed, but improves hospital efficiency by reducing the average length of stay.

⁴ J. Mas-Atance, C. Marzo-Alonso, M. Matute-Crespo, J.J. Trujillano-Cabello, N. Català-Tello, M. de Miguel-Artal, P. Forcada-Calvet, J.J. Fernández-Martínez; Randomised comparative study of early versus delayed surgery in hip-fracture patients on concomitant treatment with antiplatelet drugs. Determination of platelet aggregation, perioperative bleeding and a review of annual mortality *Revista Española de Cirugía Ortopédica y Traumatología (English Edition)*, Volume 57, Issue 4, July–August 2013, Pages 240-253

- Is delayed surgery necessary?
- Impact on postoperative process.

ANTIPLATELET THERAPY

Antiplatelet drugs

acetylsalicylic acid	clopidogrel
activity of COX-1 in platelets renews by 10% daily (20% PLT with normal COX-1 activity is sufficient for hemostasis)	inhibits PLT activity in 40–60%
duration – 7-10 days	platelets aggregation and bleeding time return to initial values in 5-7 days after drug discontinuation

Early surgery: acetylsalicylic acid and clopidogrel [5]

Current evidence indicate that over 50% of platelet functions return after drug discontinuation after at least 48-72h (which is safe and effective for the hip surgery).

	Early (< 72 h)	Delayed (> 72h)
average time to operation (days)	1.6 +/- 0.9	8.9 +/- 3.6
perioperative blood loss	no significant difference	
blood transfusion	no significant difference	
postoperative length of hospital stay	no significant difference	
intensive care unit requirement	no significant difference	
postoperative mortality	no significant difference	
length of hospital stay	shorter	
postoperative complications	lower	
1-year functional outcome	better	

Early surgery: acetylsalicylic acid and clopidogrel [5]

Discontinuation of the antiplatelet agents and early surgery – safe and effective for the medically fit patients.

uninterrupted antiplatelet medication	prolonged drug withdrawal
increased surgical bleeding and bleeding-related complications	higher risk of lethal complications related to a rebound effect such as acute coronary syndrome and thromboembolic complications*

* peaked incidence of acute coronary syndrome, due to the rebound effect, occurs between days 4 and 8 after withholding antiplatelet medications

⁵ Sa-ngasoongsong P, Kulachote N, Sirisreetreerux N, et al. Effect of early surgery in high surgical risk geriatric patients with femoral neck fracture and taking antiplatelet agents. *World Journal of Orthopedics*. 2015;6(11):970-976. doi:10.5312/wjo.v6.i11.970.

Early surgery: clopidogrel [6]

Surgery should not be postponed in hip fracture patients using clopidogrel.

	Early (< 2 days)	Delayed (> 5 days)
length of hospital stay		longer
number of blood transfusion	higher	
complication rate		higher
mortality rate		higher

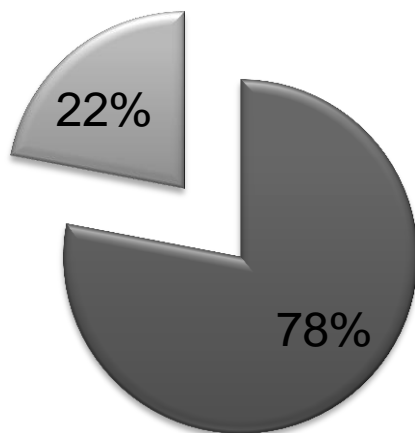
Higher perioperative blood loss and number of blood transfusions, against reduced average length of stay and lower mortality.

⁶ ZEHİR, Sinan; ZEHİR, Regayip; SARAK, Taner. Early surgery is feasible in patients with hip fractures who are on clopidogrel therapy. Acta Orthopaedica et Traumatologica Turcica, [S.l.], v. 49, n. 3, p. 249-254, Jul. 2015. ISSN 1017-995X.

Antiplatelet therapy – a survey of orthopedic surgeons [7]

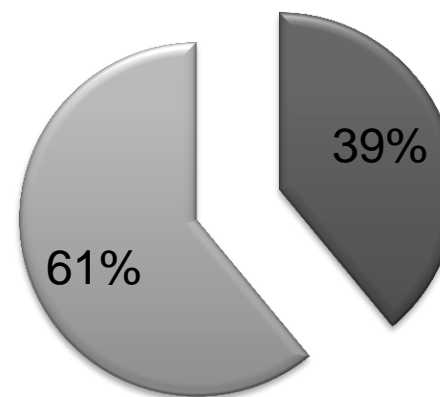
Assessment of current clinical practices regarding perioperative management of patients on antiplatelet therapy with hip fractures.

Emergent cases



- early surgery
- delayed surgery

Urgent cases



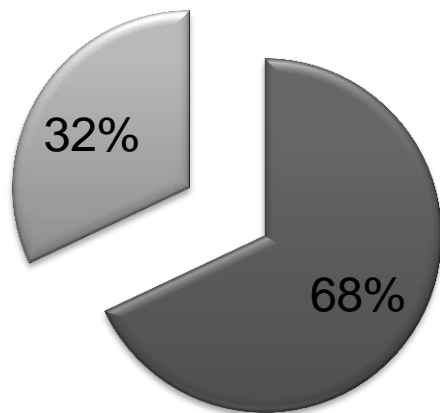
- early surgery
- delayed surgery

⁷ Christian A. Pean, Abraham Goch, Anthony Christiano, Sanjit Konda, and Kenneth Egol Current Practices Regarding Perioperative Management of Patients With Fracture on Antiplatelet Therapy: A Survey of Orthopedic Surgeons *Geriatric Orthopaedic Surgery & Rehabilitation* December 2015 6: 289-294, first published on September 9, 2015 doi:10.1177/2151458515605156

Antiplatelet therapy – a survey of orthopedic surgeons [7]

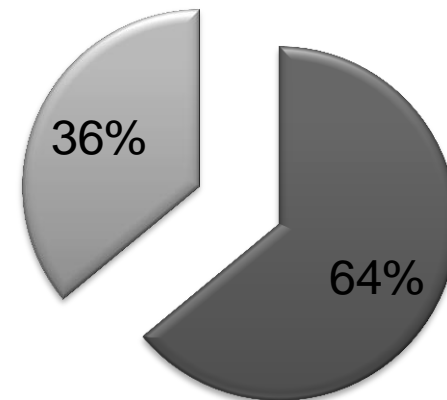
Assessment of current clinical practices regarding perioperative management of patients on antiplatelet therapy with hip fractures.

Patients on antiplatelet therapy with closed hip fractures



■ early surgery
■ delayed surgery

Presence of protocol in place at institution



■ no ■ yes

⁷ Christian A. Pean, Abraham Goch, Anthony Christiano, Sanjit Konda, and Kenneth Egol Current Practices Regarding Perioperative Management of Patients With Fracture on Antiplatelet Therapy: A Survey of Orthopedic Surgeons *Geriatric Orthopaedic Surgery & Rehabilitation* December 2015 6: 289-294, first published on September 9, 2015 doi:10.1177/2151458515605156

Antiplatelet therapy – a survey of orthopedic surgeons [7]

Conclusions:

1. There continues to be wide variability among orthopedic surgeons with regard to management of patients with fracture on antiplatelet therapy.
2. Over a quarter of surgeons continue to opt for surgical delay in patients with hip fracture.

This survey highlights the need to formulate and better disseminate practice management guidelines for patients with fracture on antiplatelet therapy.

⁷ Christian A. Pean, Abraham Goch, Anthony Christiano, Sanjit Konda, and Kenneth Egol Current Practices Regarding Perioperative Management of Patients With Fracture on Antiplatelet Therapy: A Survey of Orthopedic Surgeons *Geriatric Orthopaedic Surgery & Rehabilitation* December 2015 6: 289-294, first published on September 9, 2015 doi:10.1177/2151458515605156

Is it worth to perform it preoperatively?

Does it have impact on mortality, postoperative complications,
time to surgery and length of hospital stay?

TRANSTHORACIC ECHOCARDIOGRAM

Preoperative Transthoracic Echocardiogram [8]

	YES	NO
lower mortality		<input checked="" type="checkbox"/>
delayed surgical treatment	<input checked="" type="checkbox"/>	
longer length of stay	<input checked="" type="checkbox"/>	
cardiac intervention (e.g., cardiac catheterization, stent, stress test)		<input checked="" type="checkbox"/>

⁸ Luttrell K, Nana A. Effect of Preoperative Transthoracic Echocardiogram on Mortality and Surgical Timing in Elderly Adults with Hip Fracture. J Am Geriatr Soc. 2015 Dec;63(12):2505-2509. doi: 10.1111/jgs.13840. Epub 2015 Dec 11. PubMed PMID: 26659463.

EARLY SURGERY – CONCLUSIONS

Early surgery – conclusions

- Majoriy of researches indicates **positive balance of benefits and risk**, however it is not possible to absolutely determine time to surgery.
- **General physical health** must be carefully assessed:
 - on one hand – carefully qualify and cautiously prepare high surgical risk geriatric patients
 - on the other hand – remember that in some cases recommendation of additional consultations and examinations may unnecessarily delay time to surgery
- When patient is on antiplatelet therapy – **withhold** these **medications** on admission and provide **early surgery**.

Early surgery – conclusions

- In daily clinical practice you need to make proper clinical decisions basing on available and up-to-date studies and **cooperate with clinicians of many specialities**.
- As the number of elderly patients increase, continued research in the management of elderly patients with trauma can lead to **protocols** and **practice guidelines** to improve outcomes.

We recommend concentrating more on **optimizing the condition of patients early with sufficient medical treatment** rather than being bound by absolute timing of surgery.

Literature

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Thank you for your attention