



Laparoscopic and open surgical impact in patients treated with Anti aggregant therapy

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Laposcopic and open surgical impact in patients treated with Anti aggregant therapy

Author(s): Rossi A, Manco G, Italia S, Marra F, Rolando G, Conventi R, Malavasi V

Abstract

Background

The increase of surgical procedures in older patients requires a standardization in preoperative evaluation and management of patients affected by ischemic cardiopathy under antiplatelet therapy.

Methods

The sample of 552 patients is represented by the only patients operated on the abdomen and was split in two groups: Group A (67 patients under home antiaggregant therapy who underwent elective abdominal surgical interventions) and Group B (485 patients not under home antiaggregant therapy who underwent elective abdominal surgical interventions). Group A (antiaggregated patients) was too split in two subgroups: Subgroup A1 (22 patients, who underwent surgical operation with ongoing ASA) and Subgroup A2 (45 patients, who stopped antiaggregant therapy before the operation).

Results

Global analysis of data shows not significant statistically difference between Major and Minor Surgery Interventions.

Statistical comparison of surgical outcomes between Group A and Group B shows differences in prevalence of abdominal collections (6% in Group A vs 0.2% in Group B; p-value 0.0402). In Group A patients who needed transfusions, the average number of Units of Concentrated Erythrocytes was 3.5 (35 U for 10 transfused patients). Statistical comparison of surgical outcomes between Groups A1 and A2 shows not significant statistically difference between them.

Conclusion

Postoperative bleeding can be more easily managed than thromboembolic complications.

Introduction

In the last years we have assisted to a steady increase of surgical procedures in older and older patients. This required the need of a standardization in preoperative evaluation and management of patients affected by

ischemic cardiopathy to be treated with not cardiac surgical approach.

Thirty years after the first PCI (percutaneous coronary intervention) procedure, more than 90% of these patients need the implantation of one or more STENT [1] and around 5% of them will undergo not cardiac surgical treatment during the first year after stenting [2].

The main concern in the treatment of these patients consists in the cautious management of antiaggregant therapy during the postoperative period. Despite the high number of patients under antiaggregant therapy and the high rate of them eligible for elective abdominal surgery intervention, literature actually lacks of clear guidelines for perioperative management of these drugs.

ASA (acetylsalicylic acid) is the most studied, most tolerated and cheapest among the antiaggregant drugs and should be considered of first choice in the majority of thrombotic risk conditions. Many randomized Trials showed that this drug is effective when used in a therapeutic range between 50 and 100 mg/die [3]. Ticlopidine is an antiaggregant drug which showed a therapeutic effectiveness comparable with ASA. Clopidogrel is an antiaggregant drug which, as ticlopidine, belongs to thienopyridine class. Prasugrel has been approved in 2009 by EMEA (European Medicine Agency) for clinical practice. Compared to Clopidogrel, possible advantages consist in: quicker activity, more powerful platelet inhibition and lower inter-individual variability.

GP IIb/IIIa inhibitors (Tirofiban) act by blocking a glycoprotein located on the platelet membrane (called GP IIb/IIIa).

Actual strategy, if clinical criteria for cautious ASA interruption are met (that is to say negative anamnesis for former cardiac or cerebrovascular ischemic events), consists in:

- Suspension of the oral antiaggregant drug five days before the surgical operation or the invasive procedure (not anymore seven-ten days as recommended in the past).
- Replacement with LMWH before, during and after the surgical operation (antithrombotic prophylaxis).
- Restart of oral antiaggregant therapy from four to ten days after discharge (completing subcutaneous antithrombotic prophylaxis and starting oral antiaggregant therapy).

PURPOSE OF THE STUDY

This observational prospective study aims to provide a detailed analysis of antiaggregant therapy management in patients undergoing abdominal surgery, in order to evaluate its impact on preoperative and postoperative clinical management, on the choice of the surgical technique and on the complications revealed at postoperative follow-up.

Methods

Between January 1st, 2010 and March 31st, 2011 we examined every patient under home antiaggregant therapy undergoing elective abdominal surgical operation at U.O.C. Chirurgia II of Policlinico di Modena.

The sample of 552 patients is represented by the only patients operated on the abdomen.

The sample was then split in two groups:

- Group A: patients under home antiaggregant therapy who underwent elective abdominal surgical intervention: **67 patients**.
- Group B: patients not under home antiaggregant therapy who underwent elective abdominal surgical intervention: **485 patients**.

Group A (antiaggregated patients) was too split in two subgroups:

- Subgroup A1: **22 patients**, who underwent surgical operation with ongoing ASA.
- Subgroup A2: **45 patients**, who stopped antiaggregant therapy before the operation.

Global analysis of Group A results took into account the median age, the sex, the pathology which required the administration of antiaggregant therapy before the operation, the specialist who was concerned with the management of the therapy, the comparison between maintenance and suspension of the therapy and the kind of therapy prescribed at discharge.

For statistic comparison between the groups (Group A vs Group B; Subgroup A1 vs Subgroup A2) we used the following surgical outcomes:

- Hemorrhagic complications (need of transfusions, anastomotic fistula, parietal collections, abdominal collections, re-operations, septic shock, anemia, death).
- Thrombotic complications (perioperative acute myocardial infarction, pulmonary thromboembolism, deep venous thrombosis).

The evaluation of patients, and especially of eventual complications, didn't stop in the immediate

postoperative period, but was carried on with a watchful follow-up over a period of at least three to eighteen months after discharge.

We used the Fisher's Exact Test for the statistic analysis.

Results

Group A patients are 67 and represent 12.1% of the total sample (552 patients) operated in the period examined. The median age of this group of patients is 71.8 years.

The global analysis of data about Group A is reported in Figure 1. In this table we made a distinction between Major Surgery Interventions (laparotomy, bowel resections, abdomino-perineal resections, hepatic resections, surrenalectomies, splenectomies and gastrectomies) and Minor Surgery Interventions (laparoscopic cholecystectomies, umbilical/crural/inguinal hernias, incisional hernias, etc.). These data show not significant statistically difference between them.

In Figure 2 we reported the statistical comparison of surgical outcomes between Group A and Group B. The only significant statistically differences concern abdominal collections (6% in Group A vs 0.2% in Group B; p-value 0.0402). In Group A patients who needed transfusions, the average number of Units of Concentrated Erythrocytes was 3.5 (35 U for 10 transfused patients).

In Figure 3 we reported the statistical comparison of surgical outcomes between Groups A1 and A2. These data show not significant statistically difference between them.

Careful evaluation of patients by eighteen months follow-up showed the occurrence of cardiologic complications in only three of 67 patients studied, with an average time of presentation 8.5 months after the surgical operation.

Discussion

Current indications of antiplatelet agents are manifold and the most important for the Surgical patients are represented by:

- Primary and secondary prevention of ischemic events in patients at risk bearers of carotid atherosclerosis, coronary artery (IMA, angina stable / unstable) and peripheral (peripheral artery disease)
- Prevention of ischemic events in patients with previous TIA or stroke cerebri

- Atrial Fibrillation not receiving anticoagulant
- By pass aorto-coronary and STENT
- Prosthetics biological aortic / mitral
- thrombocytosis and Erythrocytosis etiology varies

Failure to suspend the antiplatelet during surgical procedures leads to an increase of the 'incidence of bleeding events of limited relevance, as the need for blood transfusion or anemia. The suspension of such therapy often results in an increased risk of fatal events, such as death by IMA for vascular thrombosis in the case of coronary stent (stent thrombosis).

However According to the data obtained from 'ATC TRIAL percentage of spontaneous bleeding severely increased especially for patients in dual antiplatelet therapy (aspirin and clopidogrel) compared to those who only take aspirin: 0.7 to 1.13%, an increase of 37% relative risk [4]. Although there are many trials, however, there are no studies statistically "strong" (meager data, absence of multicenter studies) about intraoperative bleeding risk.

The CURE study showed a 1% increase in the risk of major bleeding (absolute increase was 3.7%, compared with aspirin monotherapy who showed an increase of 2.7%) [5].

When the bleeding can be easily controlled, there are no indications to discontinue antiplatelet therapy [6].

In surgery in which the loss can be easily controlled hemorrhagic there are indications to stop antiplatelet therapy [6].

In the past, the fear of excessive bleeding led to the established practice to stop taking antiplatelet seven to ten days before surgery or an endoscopic procedure: concept outdated and disproved with the support of the literature.

The surgeries are a main cause of the interruption of antiplatelet therapy in 30-40% of patients [7].

A large meta-analysis comprising about 50 279 patients receiving antiplatelet therapy as secondary prevention has shown that the risk of developing a major cardiovascular event leading to discontinuation of therapy is three times higher (odds ratio, ORR = 3.14) compared with those who continued this therapy [8]; the authors of this meta-analysis concluded that for patients with a history of ischemic heart disease or other cardiovascular disease after discontinuation of therapy a clear negative prognostic factor and that choice should be considered only in special conditions, or if the risk of bleeding (especially in particular districts) is much greater than the risk of atherothrombotic events.

Numerous studies have also confirmed that the first

month after planting of BMS is at high risk for all types of non-cardiac surgery [9].

So the medicated stent (DES), an early surgery after implantation of these safeguards is associated with a significant incidence of myocardial infarction and death in the perioperative despite continued treatment with clopidogrel and aspirin [10,11].

A possible alternative, to antiplatelet therapy in the preoperative period, could be the use of unfractionated heparin or low molecular weight heparin, but there is no evidence to suggest their use to prevent stent thrombosis, as it is certain that they do not have antiplatelet properties [12].

The key-points, shared by the latest current guidelines, are:

- Presence of a high thrombotic risk interruption of antiplatelet therapy.
- Antiplatelet therapy should never be interrupted in the period subsequent to the planting of STENT. The minimum interval between the planting of medicated stent and elective surgery should be at least 12 months; as regards the installation of metallic STENT this interval should be at least 6 weeks.
- The dual antiplatelet therapy increases the probability of bleeding for the majority of surgical procedures but the impact on morbidity and mortality hemorrhagic event is generally less significant than that of stent thrombosis.
- Patients undergoing primary prophylaxis with Antiaggregating may suspend such therapy 5-7 days before surgery.
- A different interventional strategy (as interventions in laparoscopy) should be considered and implemented in high-risk patients who need to continue antiplatelet therapy

Analysis of the results from our study show that the sample of patients in antiplatelet therapy is a frequent event for Abdominal Surgeon.

Although not reached statistical significance in the analysis of thromboembolic complications in high-risk patients, antiplatelet therapy should not be withheld even if Major Abdominal Surgery, given the high risk of relapse of Acute Coronary Syndrome.

The higher incidence of ischemic events observed in the postoperative period of subsample A2 (patients with preoperative suspension of the SAA), shows a "rebound effect" or pro-thrombotic paradox due to the same suspension of antiplatelet therapy. So the suspension the ASA removes' "protective effect" against thromboembolic complication (occlusion of the stent, thrombosis of atherosclerotic plaques in the coronary), and the push pro-thrombotic effect would be amplified by the same suspension (like of what occurs for example in the case of suspension of the

drug beta-blocker).

This condition has been possible, however, described in the literature by some authors and justify the systematic replacement of the ASA with low molecular weight heparin in all patients with preoperative indication to the suspension of antiplatelet therapy, although the effect of heparin on preventing thrombotic coronary risk has not been borne out.

As for the study of hemostasis and extent of bleeding, our case study demonstrates that there is an increased need for transfusion in patients of Group A (already treated with antiplatelet therapy in the preoperative period), as would be expected.

Although these patients have an increased bleeding than patients not in with antiplatelet therapy, as demonstrated by statistical comparison of the collected abdominal (greater in patients with antiplatelet therapy), on the one hand the extent of this bleeding is clinically insignificant, it certainly does not affect the other on a relative increase of morbidity and mortality periprocedural (outcomes and the surgical results are not negatively modified).

Conclusions

For these reasons, considering the frequent cardiac complications, it is necessary that the Surgeon General learn to live with the risk of bleeding associated with antiplatelet therapy in the course of surgery, agreeing to pay the price of a possible increased bleeding while preserving the patient from the most dangerous thrombotic complication.

The postoperative bleeding, in fact, can be controlled more easily than the thrombo-embolic complications.

The ultimate goal seems to be pursued, achieving and maintaining a balance between bleeding and thrombosis, such as to prevent thrombotic events and avoid hemodynamic stress.

From the analysis of our patients, we can conclude that the bleeding risk has had a very small impact.

The contribution of laparoscopy also, especially in oncological surgery of the digestive system, has allowed a minimally invasive approach to the patient in antiplatelet therapy, resulting in a comparable risk of bleeding than patients not treated with antiplatelet therapy.

Illustrations

Illustration 1

Data global analysis

Figure 1: Data global analysis						
Variable	Feature	major surgery (n = 22)		minor surgery (n = 45)		P-value
		N	%	N	%	
Gender	Male	14	63,6%	37	82,2%	0,0870
	Female	8	36,4%	8	17,8%	0,0870
indication to antiplatelet therapy	AMI	5	22,7%	5	11,1%	0,1857
	By-pass AC	2	9,1%	4	8,9%	0,6490
	TIA	3	13,6%	4	8,9%	0,4172
	Primary prevention	7	31,8%	19	42,2%	0,8619
	PTCA	1	4,5%	0	0,0%	0,3284
	PTCA + BMS	2	9,1%	10	22,2%	0,9580
	PTCA + DES	2	9,1%	3	6,7%	0,5341
Preoperative management of Antiplatelet therapy	specialist in antiplatelet therapy	1	4,5%	1	2,2%	0,5522
	Cardiologist	14	63,6%	30	66,7%	0,5074
	Cardiologist and Surgeon	4	18,2%	9	20,0%	0,6861
	Cardiologist and anesthesiologist	1	4,5%	0	0,0%	0,3284
	Surgeon and anesthesiologist	2	9,1%	5	11,1%	0,7418

Illustration 2

Comparison of Outcomes between Group A and Group B

Figure 2: Comparison of Outcomes between Group A and Group B						
	Outcomes	Group A (n = 67)		Group B (n = 485)		P-value
		N	%	N	%	
Hemorrhagic complications	Need of transfusions	10	14.9	120	24.7	0.9773
	Anastomotic fistula	1	1.5	6	1.2	0.5979
	Parietal collections	0	0.0	3	0.6	1.0000
	Abdominal collections	4	6.0	1	0.2	0.0009
	Re-operations	2	3.0	1	0.2	0.0402
	Septic shock	1	1.5	1	0.2	0.2282
	Anemia	1	1.5	7	1.4	0.6473
	Deaths	0	0.0	2	0.4	1.0000
Thrombotic complications	Perioperative AMI	2	3.0	2	0.4	0.0741
	Pulmonary thromboembolism	1	1.5	0	0.0	0.1214

Illustration 3

Comparison of Outcomes between Group A1 and Group A2

Figure 3: Comparison of Outcomes between Group A1 and Group A2						
	Outcomes	Group A1 (n = 22)		Group A2 (n = 45)		P-value
		N	%	N	%	
Hemorrhagic complications	Need of transfusions	1	4.5	9	20.0	0.9871
	Anastomotic fistula	0	0.0	1	2.2	1.0000
	Parietal collections	0	0.0	0	0.0	1.0000
	Abdominal collections	2	9.1	2	4.4	0.3983
	Re-operations	0	0.0	2	4.4	1.0000
	Septic shock	0	0.0	1	2.2	1.0000
	Anemia	0	0.0	1	2.2	1.0000
	Deaths	0	0.0	0	0.0	1.0000
Thrombotic complications	Perioperative AMI	0	0.0	2	4.4	1.0000
	Pulmonary thromboembolism	0	0.0	1	2.2	1.0000

Reviews

Review 1

Review Title: [Very interesting and well written article](#)

Posted by Prof. Pietro G Calo on 13 Dec 2014 04:02:04 PM GMT

1	Is the subject of the article within the scope of the subject category?	
2	Are the interpretations / conclusions sound and justified by the data?	
3	Is this a new and original contribution?	
4	Does this paper exemplify an awareness of other research on the topic?	
5	Are structure and length satisfactory?	
6	Can you suggest brief additions or amendments or an introductory statement that will increase the value of this paper for an international audience?	
7	Can you suggest any reductions in the paper, or deletions of parts?	
8	Is the quality of the diction satisfactory?	
9	Are the illustrations and tables necessary and acceptable?	
10	Are the references adequate and are they all necessary?	
11	Are the keywords and abstract or summary informative?	

Rating: 7

Comment:

No

Competing interests: .

Invited by the author to make a review on this article? : Yes

Experience and credentials in the specific area of science:

Good experience of abdominal surgery and of operations with antiaggregant therapy. Previous articles on abdominal and laparoscopic surgery in Pubmed

Publications in the same or a related area of science: No

How to cite: Calo P. Very interesting and well written article [Review of the article 'Laparoscopic and open surgical impact in patients treated with Anti aggregant therapy' by Manco G]. WebmedCentral Surgery 1970;5(12):WMCRW003168

Review 2

Review Title: Laparoscopic and open surgical impact in patients treated with antiaggregant therapy

Posted by Prof. Peter Kornprat on 13 Dec 2014 10:06:26 AM GMT

1	Is the subject of the article within the scope of the subject category?	
2	Are the interpretations / conclusions sound and justified by the data?	
3	Is this a new and original contribution?	
4	Does this paper exemplify an awareness of other research on the topic?	
5	Are structure and length satisfactory?	
6	Can you suggest brief additions or amendments or an introductory statement that will increase the value of this paper for an international audience?	
7	Can you suggest any reductions in the paper, or deletions of parts?	
8	Is the quality of the diction satisfactory?	
9	Are the illustrations and tables necessary and acceptable?	
10	Are the references adequate and are they all necessary?	
11	Are the keywords and abstract or summary informative?	

Rating: 6

Comment:

No

Competing interests: .

Invited by the author to make a review on this article? : Yes

Experience and credentials in the specific area of science:

General surgeon with a lot of practice in that field of surgery

Publications in the same or a related area of science: No

References:

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How to cite: Kornprat P.Laparoscopic and open surgical impact in patients treated with antiaggregant therapy[Review of the article 'Laprosopic and open surgical impact in patients treated with Anti aggregant therapy' by Manco G].WebmedCentral Surgery 1970;5(12):WMCRW003167