"Goce Delcev" University - Stip
The Faculty of Medical Sciences
Studies for Stomatology

HEMOSTATIC EFFECT OF TRANEXAMIC ACID SOLUTION USED AS MOUTHWASH

Doc. d-r Cena DIMOVA

➢ *INTRODUCTION*

- antifibrinolytic amino acids
- oral bleeding in congenital and acquired coagulation disorders

➢ *TRANEXAMIC ACID*

➢ *EVIDENCE OF CLINICAL INVESTIGATIONS*

- AIM
- MATERIAL AND METHOD
- RESULTS
- RECOMMENDATIONS AND CONCLUSION

INTRODUCTION

- Patients receiving oral anticoagulant therapy who undergo minor oral surgical procedures may have prolonged and excessive hemorrhage.
- Temporarily withholding or decreasing the dosage of the anticoagulant exposes the patients to the risk of venous thromboembolism and potential systemic emboli from a cardiac source.

INTRODUCTION

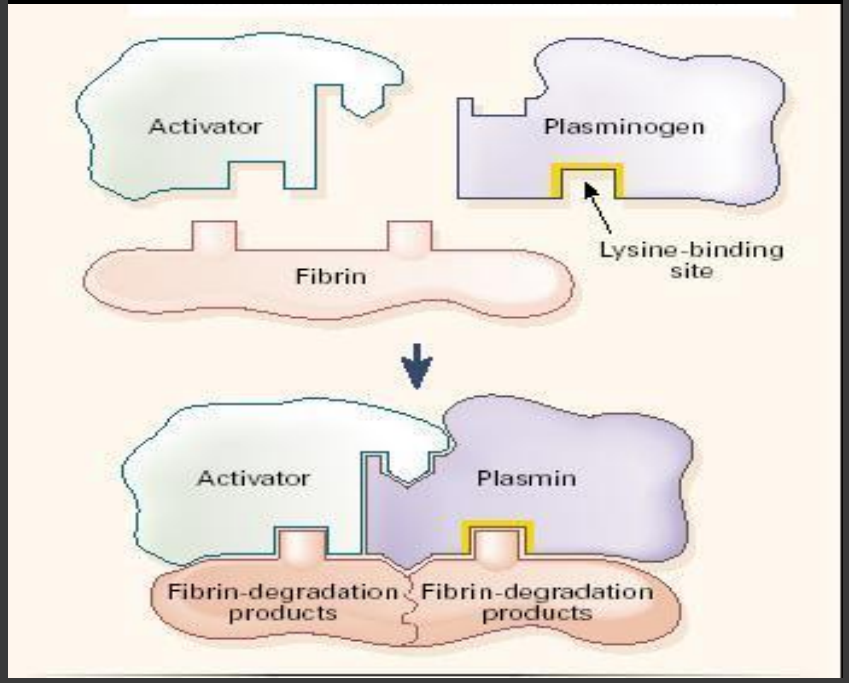
- Various protocols have been suggested for treating these patients, including substituting heparin for warfarin, decreasing the level of anticoagulation preoperatively, temporarily stopping the warfarin, and not altering the anticoagulant regimen at all.
- There remains, however, no standard therapeutic approach, and currently it appears that each patient's treatment plan is individually tailored by his or her attending specialist.

- In recent years, continuation of anticoagulant therapy in oral surgical procedures has gained more attention in the international literature, emphasizing the role of local hemostasis.
- There remains, however, a lack in consensus of treatment methods to secure this local hemostasis.
- Hemostasis in the oral cavity is dependent on the dynamic balance between fibrin formation and resolution and is influenced by the external environment, which contains both plasminogen and plasminogen activators.

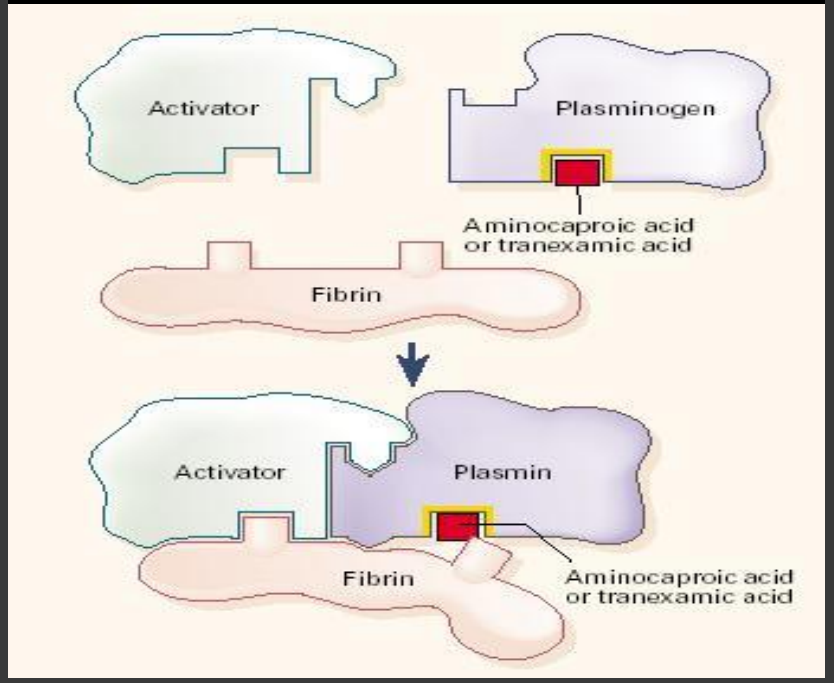
ANTIFIBRINOLYTIC AMINO ACIDS

- Two synthetic derivatives of the amino acid lysine, 6-aminohexanoic acid (aminocaproic acid) and 4-(aminomethyl)cyclohexanecarboxylic acid (tranexamic acid), have antifibrinolytic activity in humans.
- Both drugs bind reversibly to plasminogen and thereby block the binding of plasminogen to fibrin and its activation and transformation to plasmin.

activation of fibrinolysis

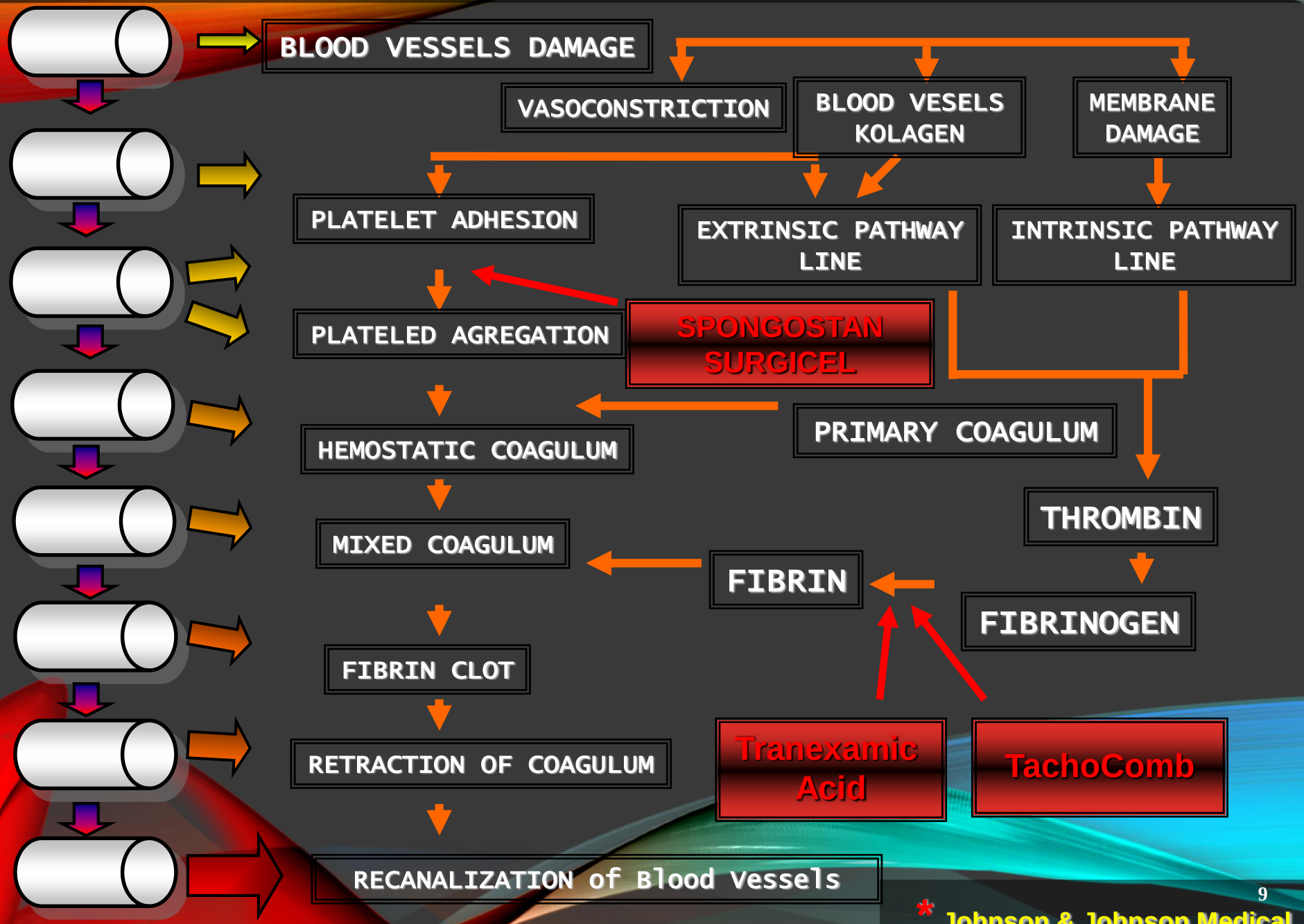


inhibition of fibrinolysis



- Aminocaproic acid and tranexamic acid (which is about 10 times more potent than aminocaproic acid and has a longer half-life) are effective even when bleeding is not associated with laboratory signs of excessive fibrinolysis.
- Since both drugs enter the extravascular space and accumulate in tissues,the basis for their efficacy is thought to be the inhibition of tissue fibrinolysis and the consequent stabilization of clots.

COAGULATION STRUCTURE WITH ACTION PLACES OF HAEMOSTATIC AGENTS *



* Johnson & Johnson Medical

ORAL BLEEDING IN CONGENITAL AND ACQUIRED COAGULATION DISORDERS

- Antifibrinolytic drugs are useful for the control of bleeding after dental extractions in patients with hemophilia, because the oral mucosa and saliva are rich in plasminogen activators.

- In two small clinical trials, aminocaproic acid or tranexamic acid reduced recurrent bleeding and the amount of clotting-factor– replacement therapy needed.

- *Introduction*

  - antifibrinolytic amino acids
  - oral bleeding in congenital and acquired coagulation disorders

- *TRANEXAMIC ACID*

- *EVIDENCE OF CLINICAL INVESTIGATIONS*

  - AIM
  - MATERIAL AND METHOD
  - RESULTS
  - RECOMMENDATIONS AND CONCLUSION

WHAT IS TRANEXAMIC ACID?

- Tranexamic acid is an antifibrinolytic agent that inhibits the breakdown of fibrin clots. Its primary action is to block the binding of plasminogen and plasmin to fibrin therefore preventing fibrinolysis.
- It has been used in anticoagulated dental patients as a local haemostatic agent in the form of a mouthwash.

TRANSAMIN ® – Tranexamic Acid

LOCAL HAEMOSTIC AGENTS

- 5% tranexamic acid antifibrinolitic mouthwash rinise

WHAT IS THE EVIDENCE OF BENEFIT FOR TRANEXAMIC ACID MOUTHWASH?

- When used alone with no local haemostatic dressing, tranexamic acid mouthwash reduces postoperative bleeding compared to placebo mouthwash.
- When used in combination with local haemostatic measures and suturing, tranexamic acid mouthwash provides little additional reduction in postoperative bleeding.

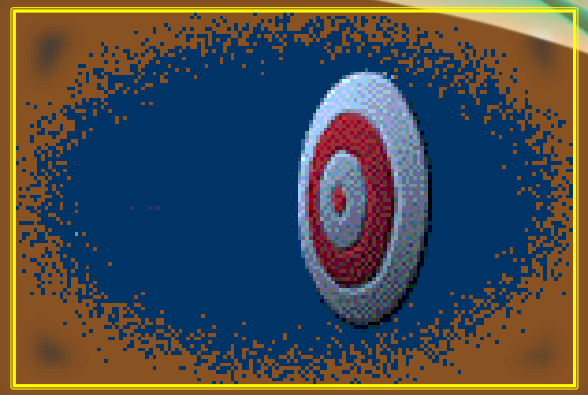
- *Introduction*

  - antifibrinolytic amino acids
  - oral bleeding in congenital and acquired coagulation disorders

- *TRANEXAMIC ACID*

- *EVIDENCE OF CLINICAL INVESTIGATIONS*

  - AIM
  - MATERIAL AND METHOD
  - RESULTS
  - RECOMMENDATIONS AND CONCLUSION



AIM

- The aim of the study was to evaluate the mouthwash solution (tranexamic acid) as a local haemostatic modality after oral surgery interventions.

MATERIALS AND METHODS

- To realize the aim 100 individuals who received oral anticoagulants were included.
- Oral surgery interventions were performed with a reduction in the level of anticoagulant therapy in the first group.
- Oral surgery interventions were realized in the second group with no change in the level of anticoagulant therapy and with usage the tranexamic acid.

MATERIALS AND METHODS

- After the interventions the surgical field was irrigated with a 5% solution of tranexamic acid in the treatment group whose oral anticoagulants had not been discontinued (second group) and with a placebo solution in the examined for whom the anticoagulant therapy was reduced (first group).
- Patients were instructed to rinse their mouths with 10 ml of the assigned solution.

RESULTS

TABLE 1. PATIENTS THERAPEUTICALLY ANTICOAGULATED WITH WARFARIN UNDERGOING DENTAL EXTRACTIONS

(N = 100 PATIENTS)	Group A (55)	Group B (45)	Total
• Gender			
Male	26	25	52
Female	20	2 8	48
• Age range (yr)	24-85	40-83	
• No. of extractions			
Mandible	46	32	78
Maxilla	25	49	74

RESULTS

TABLE 2. PATIENTS THERAPEUTICALLY ANTICOAGULATED WITH WARFARIN UNDERGOING DENTAL EXTRACTIONS

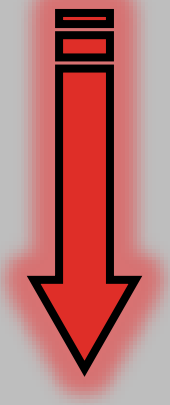
(N = 100 PATIENTS)	Group A	Group B	Total
• INR			
Mean	3.0	3.1	
Range	2.3-4.0	2.1-4.0	
• Postoperative bleed (n)*			
Mandible	0	0	0
Maxilla	0	2	2
• INR mean for			
postoperative bleed 6.7 (range, 5.9-7.6)			

Recommendations

PROTOCOL

ALGORITAM for

NON URGENT DENTAL CARE



INFORMATIC SYSTEM

ALGORITAM for NON URGENT DENTAL CARE

Pre-evaluation of dental tretman

detail anamnesis

EVALUATION of the patient

transfusiologist
cardiologist
neurologist

CONSULTATION with the physician:

lab. investigation

PT
INR
ATIII
PC
PS
fibrinolysis

evaluation of health condition

therapy rang of INR

signed consent

ORAL SURGERY TREATMAN

Local anesthesia

procedure

local haemostasis

contact with patient

controls, communication

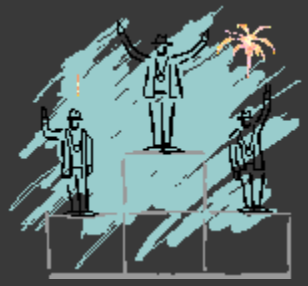
CONCLUSION

- The evidence from clinical trials and focused reviews supports continuing oral anticoagulation for patients needing dentoalveolar surgery.

- As long as the INR is within the therapeutic range and local hemostatic measures are taken following the surgery, these patients will have little chance of developing uncontrolled bleeding following the surgery.

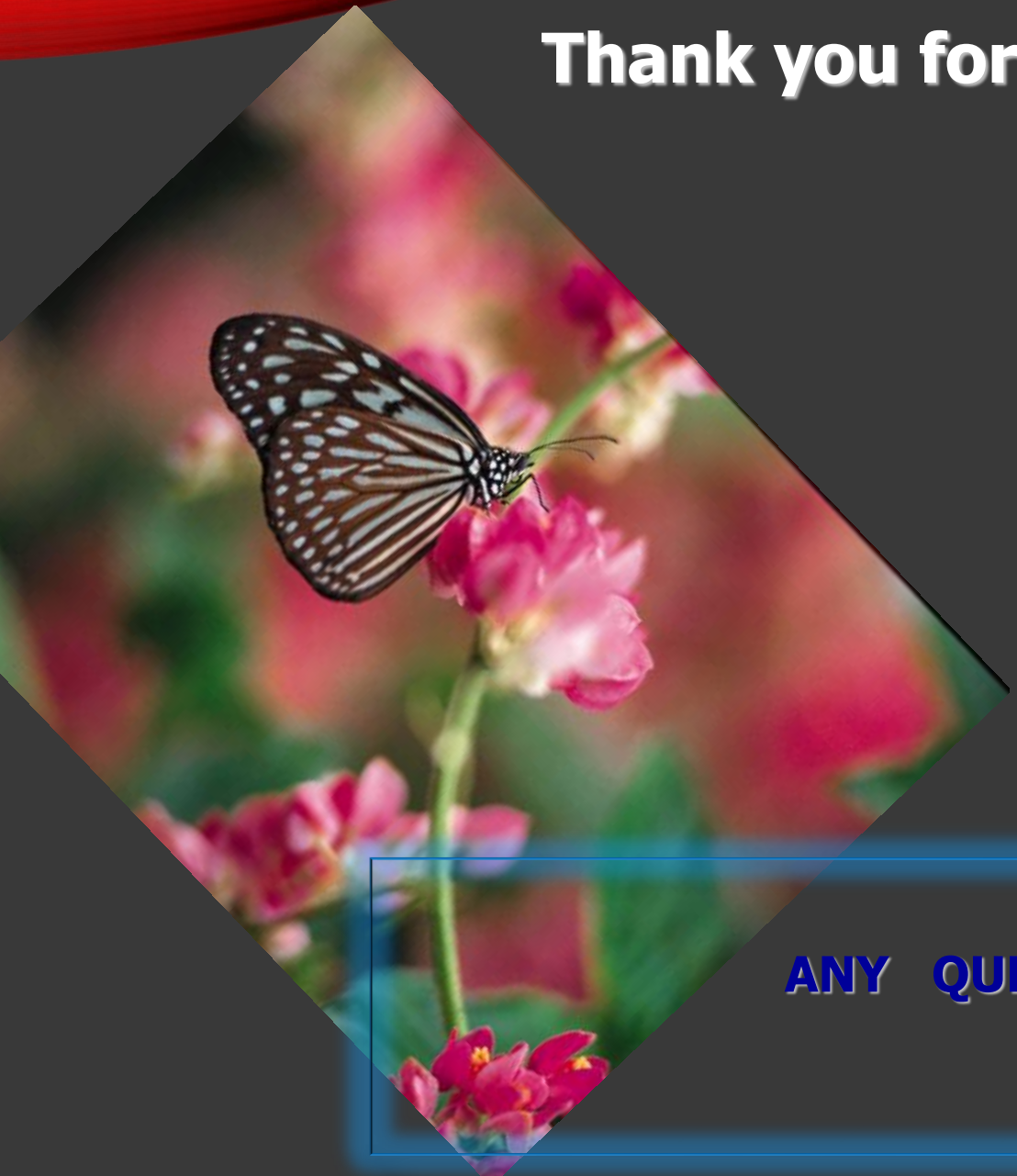
CONCLUSION

- Local hemostasis will control the bleeding in the few patients who develop postsurgical bleeding.
- The risk of uncontrolled life threatening bleeding following dentoalveolar surgery is so low that it is not necessary to stop anticoagulation even for a short interval and risk thromboembolism in patients on oral anticoagulants.



Al –Bellasi , 2006
Aldous JA, Olson CJ. ,2001
Bandrowsky T at all.1996
Beirne OR and Koehler JR. 1996
Benoliel R, at all.1986
Bernardoni-Socorro C,at all.1998
Bhatt V, Moss C. 2001
Blinder D, at all.aicher S.2001
Blinder D, at all.1999
Blinder D.at all 1996
Bodner L, at all. 1998
Borea G,at all.1993
Bridbord JW.. 2002
Bublitz R,at all. 2000
Bussey HI, Lyons RM. 1998
Caldarola F,at all. 1994
Campbell JH at all. 2000
Cesareo BV, at all. 1994
Chiarini L,at all.1997
Crean SJ, at all. 2000
Davies R, Sindet-Pedersen S.1998
Declerck D, Vinckier F.1991.
Devani P, at all .1998
Dios PD, Feijoo JF. 2001
Dunn CJ, Goa KL. 1999
Evans IL at all.2002
Farr DR, Hare AR. 1994 Jun
Gaspar R, at all.1997
Gibbons AJ, Sugar AW. 2002
Gibbons AJ, at all.2002
Guerra L, Balda I,.1995
Halfpenny W at all. 2001
Johnson - Leong C, Rada RE.2002
Lewandowski B. 2002
Marjanovic M. 2002
Martinowitz UL.1990.
Mehra P, at all.2000
Muthukrishnan A. 2000;
Pelissier A, Alantar SA. 1990.
Plaza-Costa A. at all2002
Raborn GW, at all. 1990
Saour JN, at all. 1994
Scully C, Wolff A.. 2002
Sindet-Pedersen S. 1991
Sindet-Pedersen S, at all. 1989.
Souto JC at all. 1996.
Tartaro GP,at all.1996.
Tealdi R, Caldarola F. 1993.
Throndson RR, Walstad WR.. 1999.
Todd DW, Roman A. 2001.
Troulis MJ, at all.1998
Vangelisti R, at all. 1997.
Vinckier F, Vermylen J. 1984.
Wahl MJ. 2000.
Wahl MJ. 1998.
Webster K, Wilde J. 2000.
Weibert RT. 1992.
Wepner F.. 1984 .
Wepner F, Fries R, Platz H. 1982.
Zusman SP, Lustig JP, Baston I. 1992.

Thank you for your attention



ANY QUESTIUONS ?