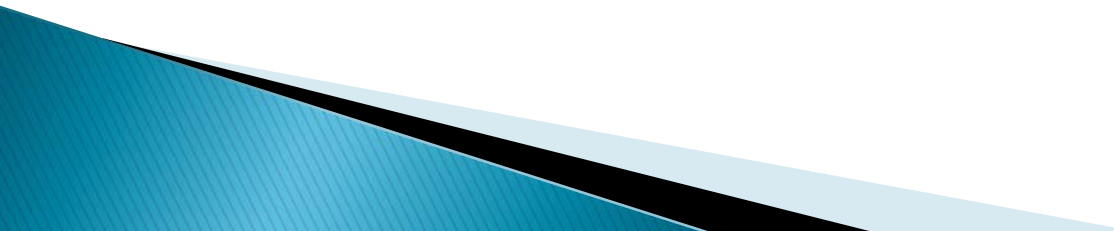




# NON OPERATIVE TREATMENT OF ACUTE APPENDICITIS – IS THIS APPROPRIATE IN SOUTH AFRICA

O.D MONTWEDI

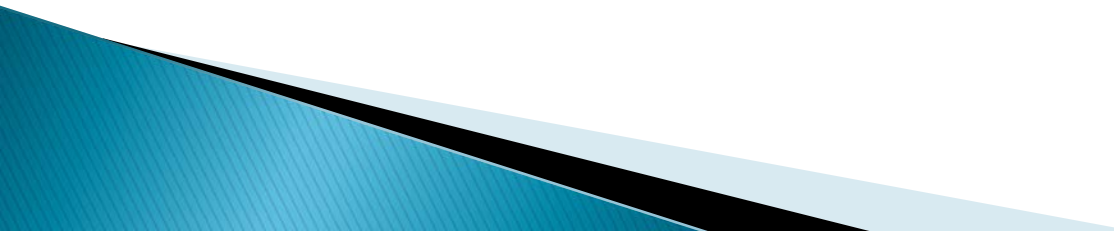
# INTRODUCTION

- ▶ Acute appendicitis is the commonest surgical emergency.
  - ▶ About 300000 appendectomies are performed in the USA annually.
  - ▶ Life time incidence is between 7 to 14%.
  - ▶ The incidence seem to be low in South Africa but complications are high.
  - ▶ Affects men and women equally.
- 

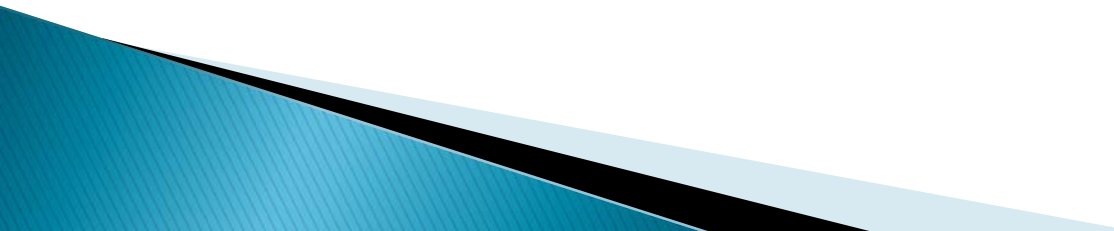
# AETIOLOGY REVISITED

- ▶ The aetiology is a matter of great debate
- ▶ **Obstruction theory:** Appendix gets obstructed leading to stasis and increased intraluminal pressure. Bacterial proliferation occurs with recruitment of inflammatory cells and pus formations. High pressure leads to ischaemia, necrosis, gangrene and perforation.

# Aetiology cont.

- ▶ **Non obstructive theory:** Bacteria invades lymphoid tissue in the appendix wall.
  - ▶ The lumen is not obstructed and this does not progress to gangrene.
  - ▶ This process may resolve spontaneously.
  - ▶ This may represent two different disease entities.
- 

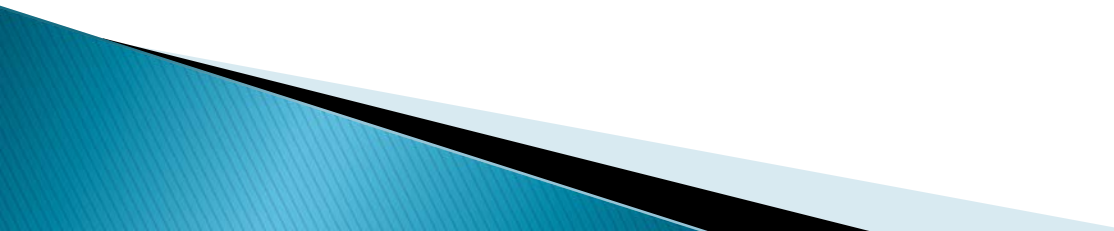
# DIAGNOSIS

- ▶ Diagnosis is clinical.
  - ▶ Inflammatory markers.
  - ▶ RIPASA Score ( Age , Gender).
  - ▶ Alvarado score.
  - ▶ Appendicitis inflammatory response score (AIR) score ( CRP).
  - ▶ Imaging.
- 

# COMPLICATED APPENDICITIS

- ▶ Duration of symptoms predicts complications.
- ▶ Incidence of complications is high in South Africa (38%).
- ▶ Other predictors include,
  - poor health insurance status
  - Poor health service utilisation
  - Level of healthcare
- ▶ Time for presentation in USA is 57.2 hours for ruptured appendicitis. Less than 24 hours in acute appendicitis.
- ▶ South Africa: 88.8 hours. 64.8 hours for non-ruptured and 105.6 hours for ruptured appendicitis.

# TREATMENT

- ▶ Appendicectomy to prevent complications has been advocated by R Fritz since 1886.
  - ▶ McBurney( 1889) recommended early appendicectomy.
  - ▶ Claudius Amyand: performed the first appendectomy
  - ▶ Laparoscopic approach for cases where diagnosis is unclear is advocated.
  - ▶ First report on antibiotics treatment was by Mcpherson( 1945) in BMJ.
  - ▶ Coldrey in 1959 reported on 471 patients with acceptable morbidity and mortality.
  - ▶ The study from china (1977); 7% Recurrence.
  - ▶ US submariners also had high success rate.
- 

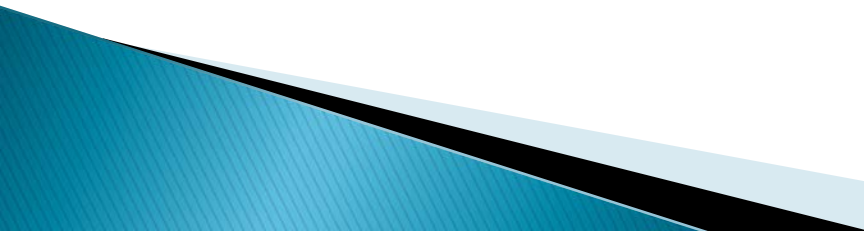
*British Journal of Surgery* 1995, 82, 166-169

# Randomized controlled trial of appendicectomy versus antibiotic therapy for acute appendicitis

S. ERIKSSON and L. GRANSTRÖM

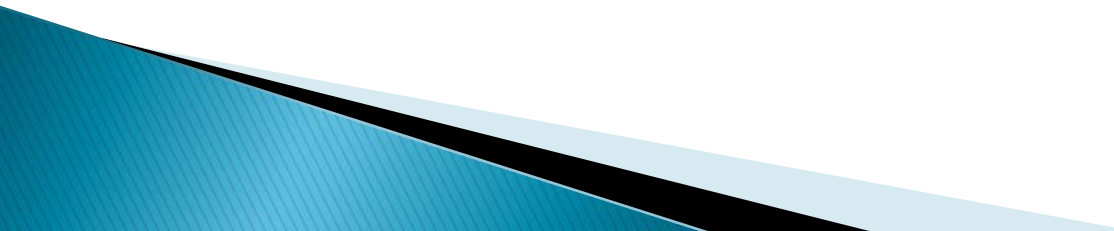
*Department of Surgery, Karolinska Institute, Danderyd Hospital, S-182 88 Danderyd, Sweden*

*Correspondence to: Dr S. Eriksson.*





# ANTIBIOTIC THERAPY ALONE

- ▶ 3 RCT tested this notion.
  - ▶ Success rate was high.
  - ▶ Recurrence was about 15%.
  - ▶ Limitations to this trials.
- 

# Appendectomy versus Antibiotic Treatment in Acute Appendicitis. A Prospective Multicenter Randomized Controlled Trial

Johan Styrud MD, PhD,<sup>1</sup> Staffan Eriksson MD, PhD,<sup>1\*</sup> Ingemar Nilsson MD, PhD,<sup>2</sup>  
Gunnar Ahlberg MD, PhD,<sup>2</sup> Staffan Haapaniemi MD, PhD,<sup>3</sup> Gunnar Neovius MD,<sup>4</sup>  
Lars Rex MD,<sup>5</sup> Ibrahim Badume MD,<sup>6</sup> Lars Granström MD, PhD<sup>1</sup>

# HANSSON TRIAL

Randomized clinical trial

Randomized clinical trial of antibiotic therapy *versus* appendicectomy as primary treatment of acute appendicitis in unselected patients

J. Hansson<sup>1</sup>, U. Körner<sup>1</sup>, A. Khorram-Manesh<sup>3</sup>, A. Solberg<sup>2</sup> and K. Lundholm<sup>1</sup>

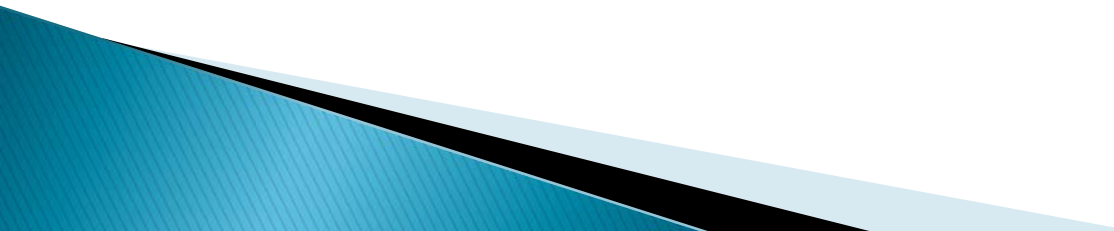
**Table 1. Major Randomized Clinical Trials Comparing Antibiotic Therapy With Appendectomy in Patients With Acute Appendicitis**

Source	Inclusion Criteria	Age Group, y	No. of Patients	Antibiotic Used for Nonsurgical Patients	Completeness of 1-Year Follow-up	Appendectomy in Patients Treated With Antibiotics <sup>a</sup>	Limitations
Styrud et al, <sup>8</sup> 2006	Clinical diagnosis and CRP >10 mg/L	18-50	Surgery: 124 Antibiotic: 128	IV: cefotaxime plus tinidazole Oral: ofloxacin plus tinidazole	Not stated	31/128 (24)	Female patients excluded, primary end point unclear
Hansson et al, <sup>7</sup> 2009	Clinical diagnosis	>18	Surgery: 167 Antibiotic: 202	IV: cefotaxime plus metronidazole Oral: ciprofloxacin plus metronidazole	Surgery: 47% Antibiotic: 54%	96/202 (48)	52.5% of patients in the antibiotic group crossed over to the surgery group
Vons et al, <sup>9</sup> 2011	CT imaging	>18	Surgery: 119 Antibiotic: 120	IV: amoxicillin plus clavulanic acid Oral: amoxicillin plus clavulanic acid	Surgery: 87% Antibiotic: 90%	44/120 (37)	Included patients with complicated acute appendicitis (appendicolith), suboptimal antibiotic for intra-abdominal infections

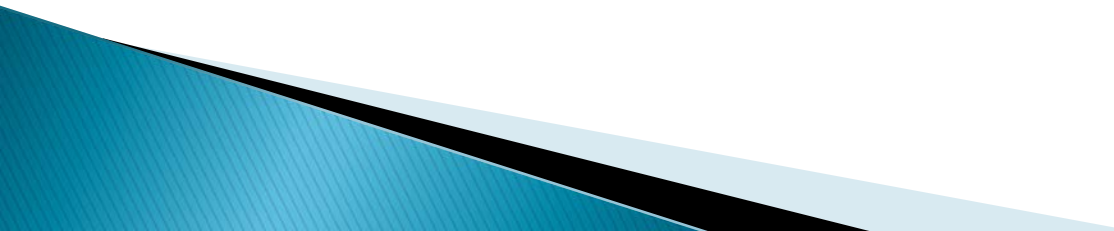
Abbreviations: CRP, C-reactive protein; CT, computed tomography; IV, intravenous.

<sup>a</sup> Data are expressed as No./total (%).

# OTHER TRIALS

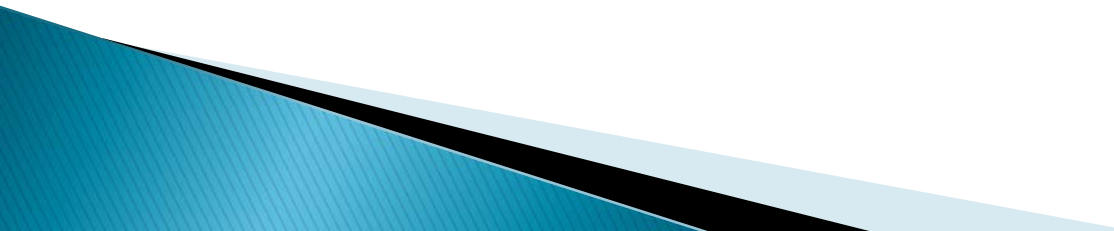
- ▶ APPAC TRIAL: multicentre, open label, non inferiority RCT. Antibiotic treatment did not reach a prespecified non inferiority criterion compared to surgery.
  - ▶ NOTA TRIAL: mean hospital stay, off sick days, pain score favoured the antibiotic group.
  - ▶ Short term failure was 11.9%.
  - ▶ Long term failure of 13.8%.
  - ▶ Svensson: study in children, had 92% success rate in antibiotic group. Long term failure was 38%. Conclusion: although no safety issues, antibiotic not recommended.
  - ▶ WSES: world congress in Egypt 2015 , Concluded that antibiotics can be successful in select patients willing to accept recurrences up to 38%.
- 

# COMMON FEATURES OF RCT

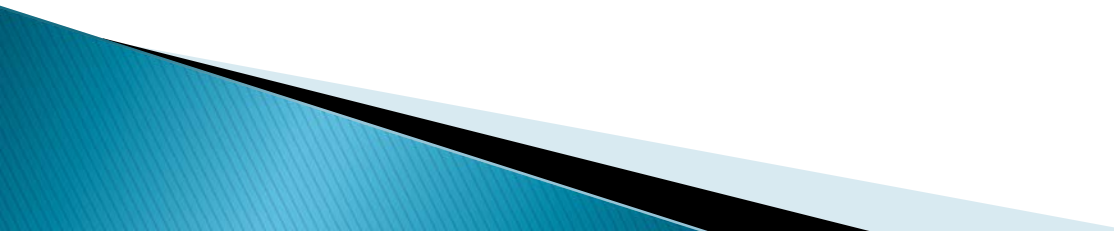
- ▶ Consenting adults should not be pregnant.
  - ▶ No immune compromised patients were included.
  - ▶ There should be no signs of sepsis.
  - ▶ IV antibiotic were given for 48 hours.
  - ▶ Continuous assessment every 6–12 hours was done.
  - ▶ Discharged on oral antibiotics for 7–8 days.
  - ▶ Surgery undertaken if no improvement in 48 hours
  - ▶ Confirmation of diagnosis is done before treatment.
- 



# ADVANTAGES

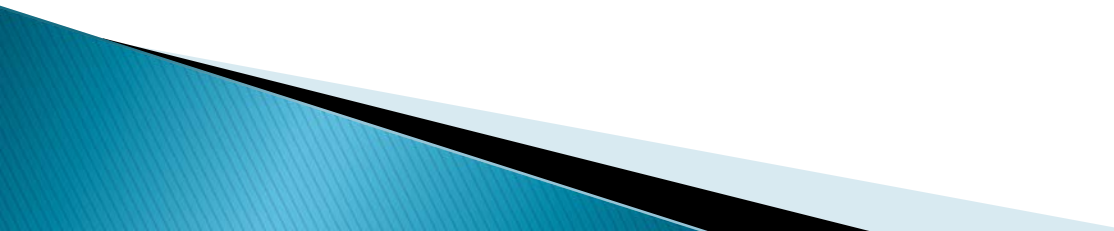
- ▶ Less pain at discharge.
  - ▶ Negative appendicectomy rate is lessened.
  - ▶ Hospital stay is short.
  - ▶ Days off work significantly reduced.
  - ▶ Complications associated with surgery and anaesthesia are eliminated.
  - ▶ Financial cost of treatment is much less. 1 Million hospital days, 3 Million U.S.D For surgery group.
  - ▶ Laparoscopy may increase the costs.
  - ▶ Efficacy was shown to be similar to surgery.
  - ▶ Morbidity and mortality not increased.
- 

# DISADVANTAGES


- ▶ Antibiotic resistance.
  - ▶ Allergy to antibiotics.
  - ▶ Missing other pathology.
  - ▶ Recurrence.
  - ▶ Uncertainty.
  - ▶ Lingering Symptoms ( Quality of life)
- 



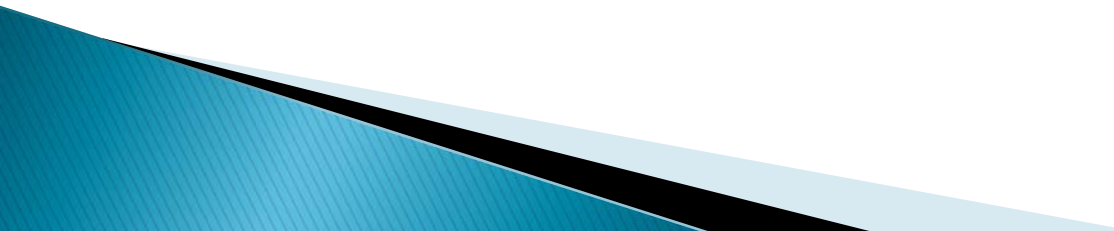
# RISK FACTORS FOR FAILURE OF CONSERVATIVE TREATMENT

- ▶ Faecolith.
  - ▶ High CRP.
  - ▶ Signs of Small bowel obstruction.
  - ▶ Poorly marginated focal mesenteric infiltrates.
  - ▶ Clinical progression.
- 

# SOUTH AFRICAN SITUATION

- ▶ Late presentation: already a selection process has occurred. Resolution unlikely.
  - ▶ Most patients have complications at presentation.
  - ▶ Most patients do not respond on antibiotic whilst waiting for theatre.
  - ▶ Imaging not always readily available.
  - ▶ Availability of antibiotics and human resource to monitor patients could be a challenge.
  - ▶ Follow up, to at least 12 months, is not always feasible for our patients.
  - ▶ HIV is common in S.A, this factor has not been tested in antibiotics trials.
- 

# KALAFONG HOSPITAL

- ▶ JANUARY 2015 – JUNE 2016
  - ▶ 242 APPENDICECTOMIES DONE.
  - ▶ 209 RECORDS FOUND.
  - ▶ AGE: 15 – 62 years
  - ▶ FEMALES: 83
  - ▶ MALES: 126
  - ▶ DURATION OF SYMPTOMS: 1–14 DAYS
- 

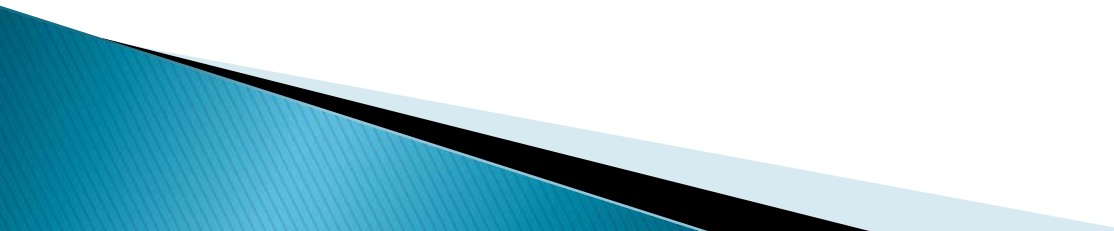
# HIV STATUS

- ▶ UNKNOWN: 160 (76.6%)
- ▶ POSITIVE: 14 (6.7%)
- ▶ NEGATIVE: 35 (16.7%)


# HISTOLOGY

- ▶ ACUTE INFLAMMATION: 53 (25%)
- ▶ SUPPURATIVE: 95(45%)
- ▶ NORMAL HISTOLOGY: 46(22%)
- ▶ OTHERS: 2(0.96%) Mucinous  
Neoplasm.

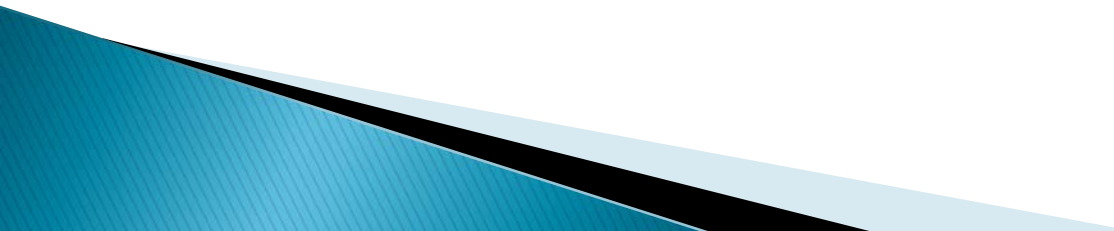
# OUTCOME

- ▶ MORTALITY: 0
  - ▶ MORBIDITY: 27 (12.9%)
  - ▶ Reported mortality: 0.07–0.7% (0.5–2.4%)
  - ▶ Reported morbidity: 10–19% (12–30%)
- 

# CONCLUSSION

- ▶ The role of antibiotics treatment is not appropriate in South Africa.
  - ▶ Appropriate, adequately powered RCT with standardised inclusion criteria are needed.
  - ▶ Analysis on intention to treat, comparing benefit over surgery should be done.
  - ▶ Gold standard remains appendicectomy
  - ▶ Mortality is low
  - ▶ Complications are reasonably low and manageable.
- 

# CONCLUSION CONTINUITY

- ▶ Role of antibiotics should be as a bridge to surgery.
  - ▶ In areas where surgical expertise is not immediately available, Antibiotics could be of benefit.
  - ▶ Antibiotic only treatment may be feasible in a select group of patients who can be followed closely for clinical progression.
  - ▶ Should perhaps be used only in a clinical trial.
- 



**THANK YOU**

