

IS ANTIBIOTIC PROPHYLAXIS NECESSARY IN CLEAN SOFT TISSUE HAND SURGERY?

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2012 AAOS ANNUAL MEETING

**TEMPLE UNIVERSITY DEPARTMENT OF
ORTHOPAEDIC SURGERY AND SPORTS MEDICINE**

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Rick Tosti M.D.

My disclosure is in the Final Program
Book and in the AAOS database. I have no potential
conflicts with this presentation.

BACKGROUND

- **Deep surgical infections of the hand can have deleterious consequences such as fibrosis, stiffness, decreased function, and amputation**
- **Antibiotic prophylaxis is indicated in most procedures to prevent surgical wound infection**
- **However, the role of antibiotic prophylaxis in the hand is not yet defined.**

BACKGROUND

- Reports on the use and exclusion of antibiotics (abx) in clean orthopaedic wounds have sited infection rates of <1-15%.
- Harness *et al.* reported on 2336 pts after carpal tunnel release with an overall infection rate of 0.4% with abx and 0.7% without abx (Level III evidence). JHS 2010
- Aydin *et al.* reported on 1340 pts after hand procedures with an overall infection rate of 3.1% with abx and 3.4% without abx (Level I evidence). PRS 2010
- Whitakker *et al.* reported on 157 pts after traumatic hand lacerations with an overall infection rate of 15% with IV abx, 4% with IV + PO abx, and 13% without abx. (Level I evidence). JHS 2005

BACKGROUND

- **Our study will evaluate clean incised soft tissue hand procedures with respect to the administration or exclusion of perioperative antibiotic prophylaxis with a primary outcome measure of post operative infection.**
- **NULL HYPOTHESIS: antibiotic prophylaxis will have no effect on the rate of infection following soft tissue hand surgery.**

PATIENTS + METHODS

- Retrospective review of 635 elective hand surgery patients from 2007-2010.
- **INCLUSION CRITERIA**
- Clean incised soft tissue procedures including:
 - Carpal tunnel release
 - Mass excision
 - Trigger finger release
 - 1st dorsal compartment release
 - Tenolysis

PATIENTS + METHODS

- Retrospective review of 635 elective hand surgery patients from 2007-2010.
- **EXCLUSION CRITERIA**
- Soft tissue procedure concomitantly performed with joint or bone procedure or any procedure involving an implant
- Charts with incomplete medical records

PATIENTS + METHODS

- Patient demographic data was recorded as were antibiotic agent, procedure, and development of infection within 30 days of the operation.
- Antibiotic administration was given at the discretion of senior hand surgeon
- Superficial infection was defined as one requiring medical management (antibiotic treatment)
- Deep infection was defined as one requiring surgical management (incision and drainage)

STATISTICS

- **Statistical significance was defined as a P value less than 0.05.**
- **Statistical testing was done using Fisher's exact test or student's T-test.**
- **Univariate analysis was also performed for risk factors associated with superficial infection.**

RESULTS

OVERALL COMPARISONS OF ANTIBIOTIC PROPHYLAXIS

	No Peri-op Antibiotics	Peri-op Antibiotics	p
Number of Patients	403	232	
Age (years)	51.3 (±14.9)	55.8 (±14.6)	
Gender (male)	132 (32.8%)	79 (34.1%)	0.79
Diabetes	87 (21.6%)	61 (26.3%)	0.2
Smoker	68 (16.9%)	63 (27.2%)	0.03
CTR	198	100	
Trigger Release	125	50	
Excision	43	38	
DeQuervain	22	22	
Tenolysis	15	22	
Superficial Infection	3 (0.75%)	3 (1.29%)	0.67
Deep Infection	0	0	

RESULTS

INFECTION RATES BY PROCEDURE

Procedure	Number of Procedures	Superficial Infection	Deep Infection
CTR	298	3 (1.01%)	0
Trigger	173	1 (0.58%)	0
DeQ	44	0	0
Excision	81	0	0
Tenolysis	37	2 (5.4%)	0
Totals	635	6 (0.95%)	0 (0%)

RESULTS

UNIVARIATE ANALYSIS FOR RISK FACTORS ASSOCIATED WITH SUPERFICIAL INFECTION

Variable	P	Odds ratio	95% Confidence Interval
Age	0.05	0.95	0.90 – 0.99
Sex	0.1	4.06	0.74 – 22.3
DM	0.7	0.65	0.08 -5.63
Smoking	0.4	1.95	0.35 – 10.76
CTR	0.9	1.13	0.23 – 5.62
Trigger	0.6	0.53	0.06 – 4.56
Excision	1.0	0.001	
DeQ	1.0	0.001	
Tenolysis	0.02	8.46	1.50 – 47.77
Abx	0.5	1.74	0.35 – 8.68
Ancef	0.4	2.09	0.42 – 10.47
Vanco	1.0	0.001	
Clinda	1.0	0.001	

DISCUSSION

KEY POINTS IN HAND PROPHYLAXIS...



DISCUSSION

- **OVERALL INFECTION RATES WERE LOW**
 - **0.9% SUPERFICIAL** - **0% DEEP**
- **SUPERFICIAL INFECTION RATE**
 - **0.75% NO ABX** - **1.29% ABX**
 - * NOT SIGNIFICANT
- **TENOLYSIS HAD 8.5x HIGHER CHANCE OF INFECTION THAN OTHER PROCEDURES**
 - * SIGNIFICANT

DISCUSSION

- Perhaps low overall infection rate yet higher risk for tenolysis is a confounder of operative time, extent of dissection, or re-operation.
- Henley *et al.* had shown a significant risk in infection when the operative time exceeded 2 hrs. (Level I evidence). CORR 1985

LIMITATIONS

- **LEVEL III EVIDENCE (JBJS Criteria)**
- **RETROSPECTIVE DESIGN**
- **NO RANDOMIZATION**
- **LOSES TO FOLLOW UP**
- **POTENTIAL TYPE II ERROR**

CONCLUSIONS

- **Fail to reject the null hypothesis.**
- **There is insufficient evidence to conclude that antibiotic prophylaxis effects the rate of post-operative infection in clean soft tissue hand surgery.**
- **This study does not support the use of prophylactic antibiotics in clean incised soft tissue hand procedures.**

IMPLICATIONS FOR FURTHER RESEARCH

- **Insight to a potential prospective study in which larger power, randomization, and double blind design can be employed.**
- **Other factors such as risk of adverse events (fever, diarrhea etc), emergency vs. elective procedures, operative length, presence or absence of an implant could additionally be assessed.**

QUESTIONS?

