

Management of infectious tenosynovitis in the flexors of the hand: review of 127 cases and proposal for an antibiotic therapy protocol

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Introduction

- 1912: Kanavel
- Frequent and serious condition
- No consensus:
 - Surgery: open/closed catheter irrigation
 - Antibiotic therapy: IV/PO, duration,



Objectives

- Evaluate the impact of:
 - Antibiotic therapy modalities (administration, duration)
 - Surgical technique (open drainage/closed catheter)
- Establish an effective and consensual service protocol

Materials and methods

- Retrospective
- 2013 - 2018 (5 years)
- Monocentric (CHU Caen)
- Identification: CCAM
- Clinical diagnosis: Kanavel signs
- Inclusion: positive diagnosis + 6 months minimum follow-up
- Exclusion: lack of data, amputation, other infectious pathology



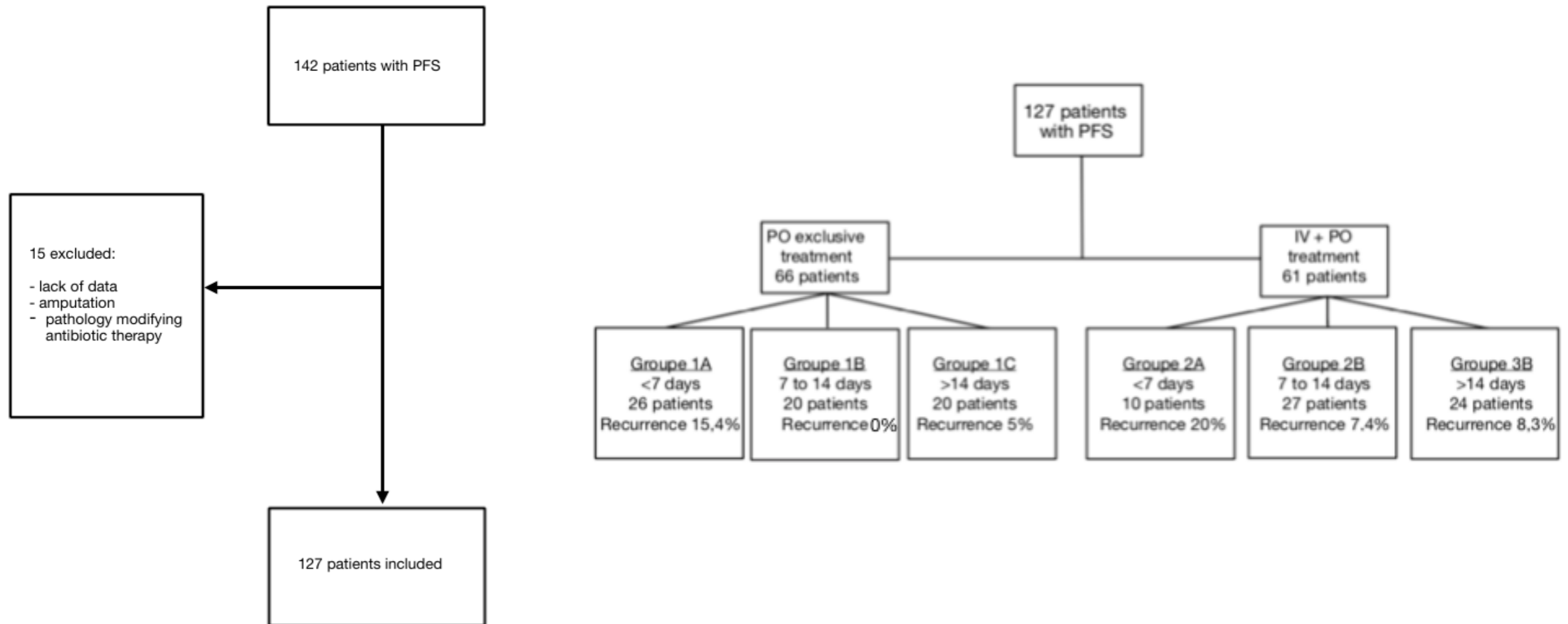
Materials and methods

- Main criteria: cure or recurrence
 - recurrence during the 6 first months
- Variables assessed:
 - Preoperatively: age, sex, comorbidities (smoking, diabetes, immunosuppression), mechanism, finger, antibiotic therapy
 - During surgery: phlegmon stade (Michon, 1974)
 - Post-operatively: bacteria, susceptibility to antibiotics
 - Therapeutically: surgery, antibiotic therapy
- Study of risk factors for recurrence by logistic regression (STATA 14)

Materials and methods

- Was defined as IV or IV + PO antibiotic therapy:
 - IV administration during surgery (systematic)
 - IV or IV + PO administration post-operatively
- Was defined as PO antibiotic therapy:
 - IV administration during surgery (systematic)
 - PO administration post-operatively
- Classification into 3 groups (<7, 7-14, >14)

Flow chart and patient groups



Results: demography

- Demography: 127 patients
- Descriptive data:
 - 43,7 years (16 - 80)
 - Male sex (54,3%)
 - Comorbidities (46,5%)
 - Finger (2>3>4>1>5)
 - Mechanism (wound > bite > puncture)
 - Stade (1>2>3)
 - Preoperative antibiotic therapy (22,1%)

Results: surgery

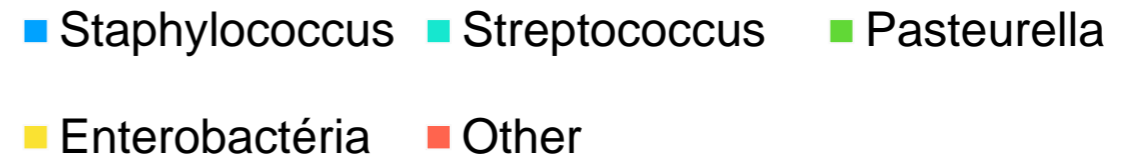
- Surgical technique: open (32,3%) or closed catheter (58,3%)
- Indication by stage varied according to the operator



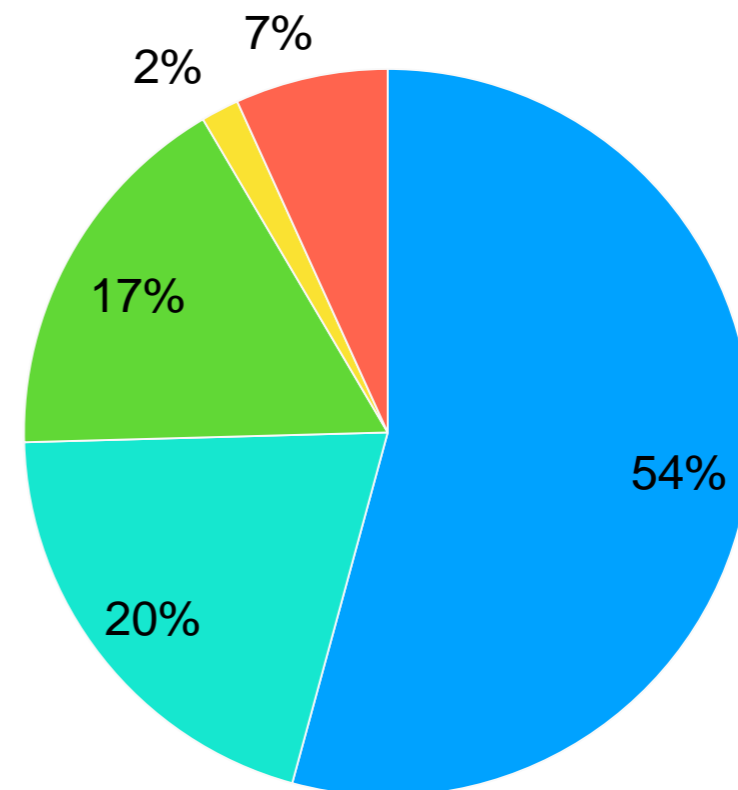
Distribution of phlegmon stages within surgical groups

Type of surgery	Stage 1	Stage 2	Stage 3	No information provided	Total
Open drainage	18 (43.9%)	16 (39.1%)	1 (2.4 %)	6 (14.6%)	41 (32.28%)
Close catheter irrigation	41 (55.4%)	17 (23%)	0 (0%)	16 (21.6%)	74 (58.27%)
No information provided	3 (25%)	3 (25%)	0 (0%)	6 (50%)	12 (9.45%)

Results: microbiology



- Positive samples (63,9%)
- Monobacterial (75,6%)
- Resistance to amoxicillin + clavulanic acid: 5,5%



Results: antibiotic therapy


- Post-operative antibiotic therapy (100%)
- Average duration: 11,3 days
- Average length of hospital stay: 3,3 days
- Amoxicillin + clavulanic acid: 81,1%
- IV or IV+PO (48%) PO (52%)

Results: predictive factors

Factor studied	Recovery (%)	Recurrence (%)	Odds Ratio (OR) Ic 95% (p=)
Sexe			
M	63 (91.30%)	6 (8.70%)	1.01[0.29-3.49] (p=0.99)
F	53 (91.38%)	5 (8.62%)	
Comorbidity			
None	50 (92.59%)	4 (7.41%)	0.59[0.16-2.16] (p=0.42)
Presence	52 (88.14%)	7 (11.86%)	
Average age (years)	43.84	42.55	(p=0.79)
Affected finger			
Thumb	17 (85%)	3 (15%)	1.5 [0.30-7.48] 2.38 [0.36-15.76] (omitted) 1.94 [0.18-21.12] 1.76 [0.16-19.34] (p= 0.93)
Index	34 (89.47%)	4 (10.53%)	
Major	27 (93.10%)	2 (6.90%)	
Annular	17 (100%)	0 (0.00%)	
Auricular	11 (91.67%)	1 (8.33%)	
Multiple	10 (90.91%)	1 (9.09%)	
Mechanism			
Wound	27 (93.10%)	2 (6.90%)	1.70 [0.23-12.80] 0.74 [0.09-5.72] 0.39 [0.06-2.62] (p=0.48)
Puncture	46 (95.83%)	2 (4.17%)	
Bite	20 (90.91%)	2 (9.09%)	
Other	16 (84.21%)	3 (15.79%)	
Phlegmon stage			
1	57 (91.94%)	5 (8.06%)	0.70 [0.18-2.80] (omitted) 1.14 [0.21-6.27] (p=0.83)
2	32 (88.89%)	4 (11.11%)	
3	1 (100%)	0 (0.00%)	
No information provided	26 (92.86%)	2 (7.14%)	
Type of bacteria			
Negative	43 (97.73%)	1 (2.27%)	0.13 [0.01-1.13] 0.26 [0.01-4.42] 0.09 [0.01-1.15] (omitted) 0.20 [0.02-2.33] (p=0.20)
Staphylococcus	27 (84.38%)	5 (15.63%)	
Streptococcus	11 (91.67%)	1 (8.33%)	
Pasteurella	8 (80.00%)	2 (20%)	
Other	5 (100%)	0 (0.00%)	
Multibacterial	17 (10.53%)	2 (10.53%)	
Preoperative antibiotic therapy			
None	85 (91.40%)	8 (8.60%)	1.28 [0.31-5.17] (p= 0.74)
Presence	25 (89.29%)	3 (10.71%)	

Bacteriological sampling			
Negative	1 (2.27%)	10 (12.82%)	0.16 [0.02-1.28] (p= 0.03)
Positive	43 (97.73%)	68 (87.18%)	

Results: therapeutic choices

Post-operative antibiotic therapy IV + PO or IV PO	55 (90.16%) 61 (92.42%)	6 (9.84%) 5 (7.58%)	1.33 [0.38-4.60] (p= 0,65)
Treatment duration ≤ 7 days 7 days < duration ≤ 14 days > 14 days	30 (83.33%) 45 (95.74%) 41 (93.18%)	6 (16.67%) 2 (4.26%) 3 (6.82%)	 4.5 [0.85-23.8] 2.73 [0.63-11.81] (p= 0.14)
Patient groups 1A 1B 1C 2A 2B 2C	22 (84.62%) 20 (100%) 19 (95%) 8 (80%) 25 (92.59%) 22 (91.67%)	4 (15.38%) 0 (0.00%) 1 (5%) 2 (20%) 2 (7.41%) 2 (8.33%)	1.375 [0.21-9.01] (omitted) 4.75 [0.38-60.14] 3.125 [0.38-25.92] 2.75 [0.33-22.92] (p= 0.63)
Type of surgery Closed catheter irrigation Open drainage	67 (90.54%) 37 (90.24%)	7 (9.46%) 4 (9.76%)	0.97 [0.27-3.52] (p= 0.96)

Discussion

- Litterature:
 - **similar epidemiological data**
 - influence of comorbidities
 - no unanimity on surgery
 - a study with similar conclusions
- Trevor R et Al. Hand 2017
- Meredith Osterman et Al. J Hand Surg Am 2014
- Reid W. Draeger et Al. J Am Acad Ortho Surg 2010
- John R. Fowler, Asif M. Ilyas. Epidemiology of Adult Acute Hand Infections at an Urban Medical Center . J Hand Surg Am. 2013 Jun;38(6):1189-93
- William Mamanea et Al. Journal of Orthopaedics 2018
- Shirzad Houshian et Al. International Journal of Infectious Diseases 2006
- Z.H. Dailiana et Al. J Hand Surg Eur

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- John R. Fowler et Al. J Hand Surg Am 2013
- Hee-Nee Pang et Al. J Bone Joint Surg 2007

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- M. Merle et Al. Chirurgie de la main. L'urgence 2016
- Gutowski KA et Al. Ann Plast Surg 2002
- Trevor R. et Al. Hand 2017

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Étude comparative rétrospective de l'antibiothérapie postopératoire pendant 15 jours versus 21 jours dans les phlegmons des gaines digitales de stade 2 ou 3

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Discussion

- Bias:
 - Retrospective study
 - Monocentric
 - Small cohort: lack of power
- Interest of a prospective multicenter study

Conclusion

- No difference preoperative antibiotic therapy
- No difference open/ closed catheter stade 1-2
- No difference PO or IV/ IV + PO
- No difference duration: but 7-14J
- Let us consider a protocol allowing ambulatory management of this pathology

Thank you

