

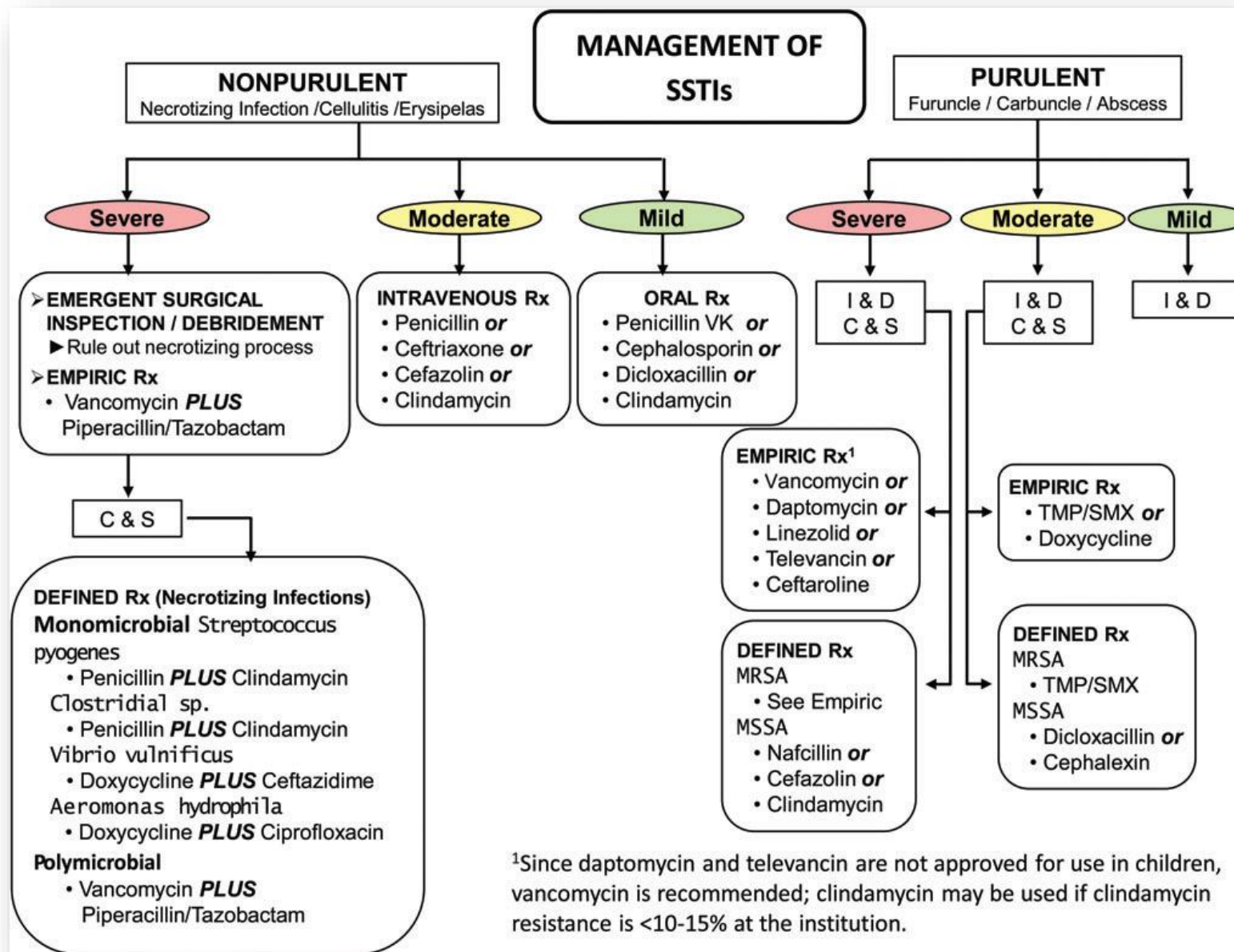
# Infections nécrosantes des parties molles

Pr Julien Poissy  
Médecine intensive/Réanimation CHU Lille

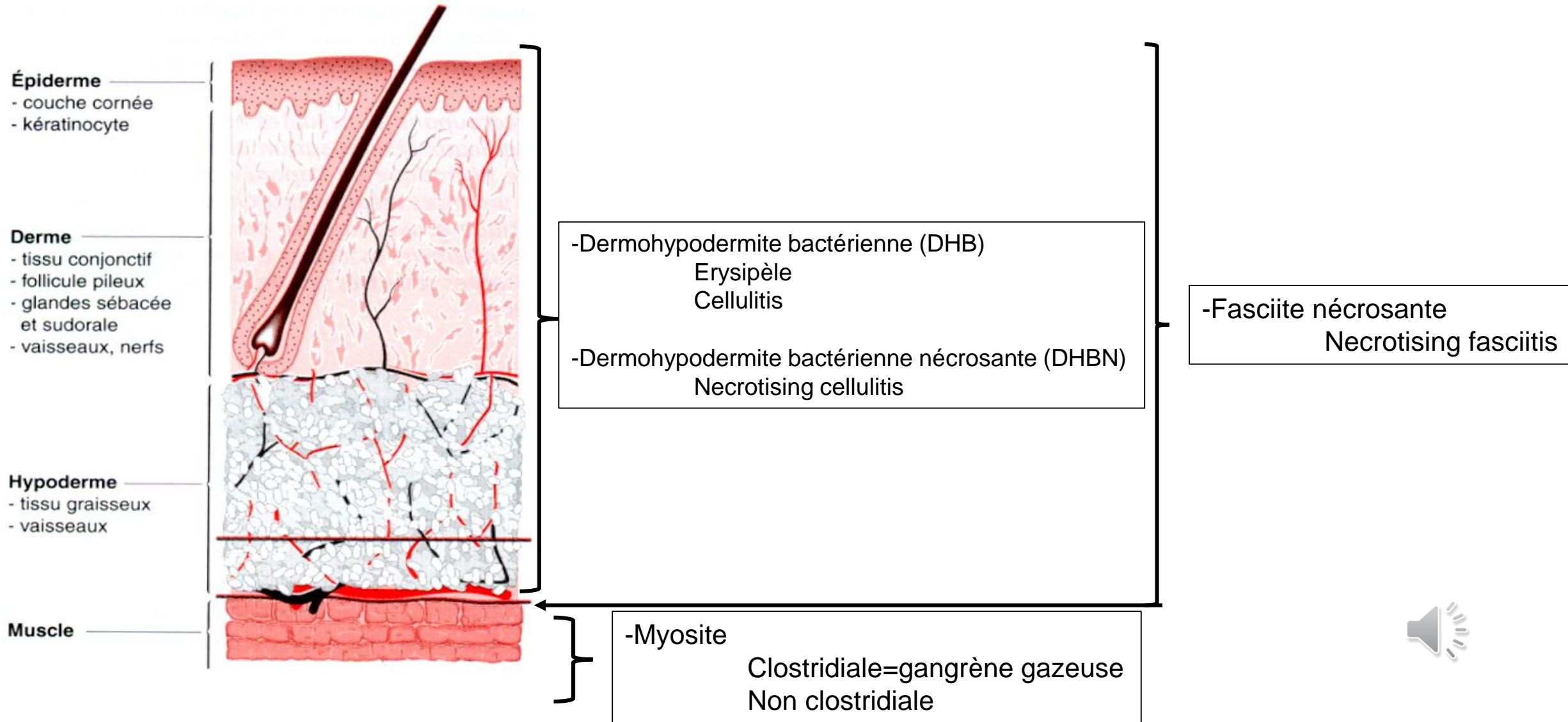
DUCAI



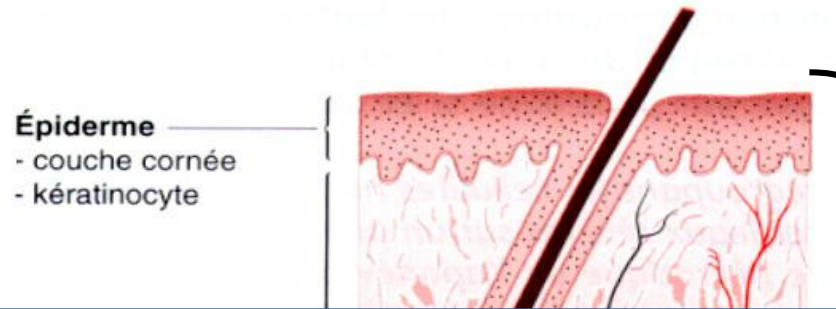
# Terminologie - classification



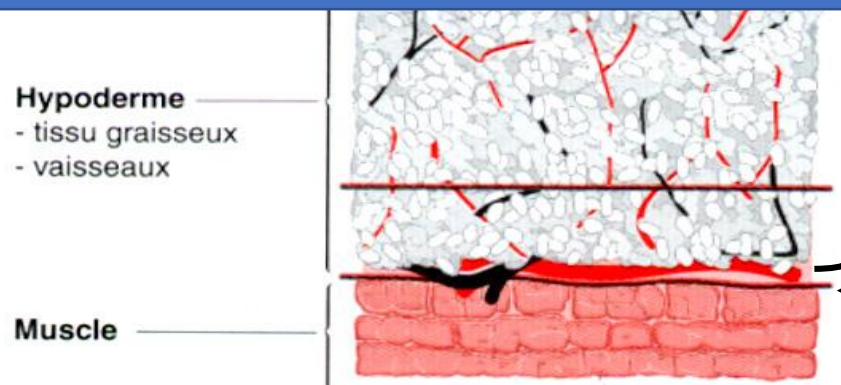
# Les infections « non purulentes »: classification selon la **profondeur de l'atteinte** et le **caractère nécrotique**



# Les infections « non purulentes »: classification selon la **profondeur de l'atteinte** et le **caractère nécrotique**



## Necrotizing soft tissue infections : NSTIs Infections nécrosantes peau et parties molles

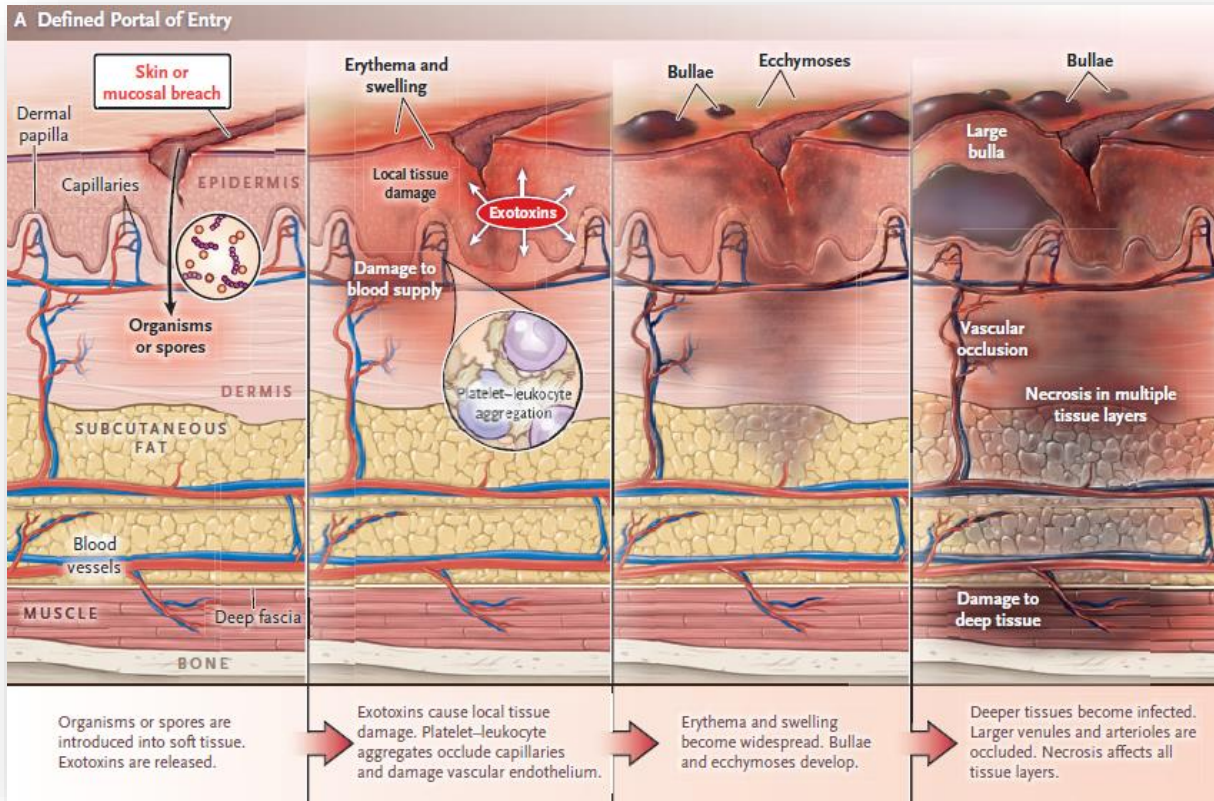


-Myosite

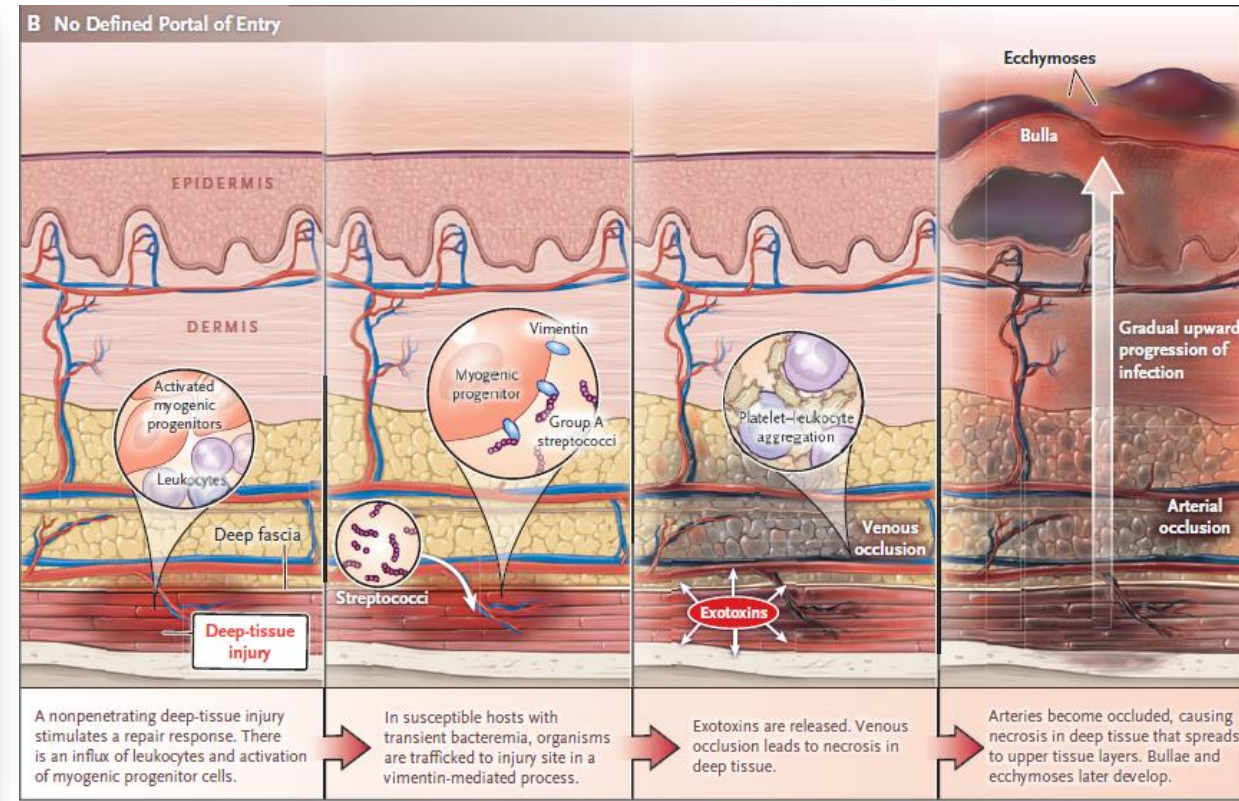
Clostridiale=gangrène gazeuse  
Non clostridiale



# Différentes présentations cliniques des NSTIs selon la porte d'entrée



Porte d'entrée « connue » de type effraction  
Progression de la surface vers la profondeur



Porte d'entrée « inconnue »  
Progression de la profondeur vers la surface

# Nécrosant versus non-nécrosant : plus rare

## DH non nécrosante

- Adulte de plus de 50 ans
- 10-100 nouveaux cas par an/100 000 habitants
- Facteurs de risque
  - Obésité
  - Lymphoedème/insuffisance veineuse
  - Porte d'entrée : intertrigo, ulcères etc...
  - Diabète non équilibré
  - immunodépression

## DH nécrosante

- 4-8 nouveaux cas par an/100 000 habitants
- Myosite clostridiale devenue très rare
- Facteurs de risque
  - Les mêmes + :
  - Contusion
  - Effraction/plaie pénétrante
  - Cancer
  - Rôle discuté des AINS



# Nécrosant versus non-nécrosant : plus grave, multimicrobien

## DH non nécrosante

- Monomicrobien
  - Majoritairement Streptocoque B-hémolytique du groupe A (*Streptococcus pyogenes*)
  - Plus rarement Staphylocoque doré (*Staphylococcus aureus*)
- Spécificités bactériologiques en fonction du terrain
- Gravité/retentissement général rares
  - Choc septique

## DH nécrosante

- 70-80% plurimicrobien
  - Synergie flore aérobie/anaérobie.
  - Genre et espèces en fonction des localisations (membres, périnées, face) et des circonstances de survenue
- 20-30 % monomicrobien
  - *S. pyogenes* et *S. aureus*
- Spécificités bactériologiques en fonction du terrain
- Grave :
  - Réanimation dans 50% des cas





Crédit photo: [www.smartfiches.fr](http://www.smartfiches.fr)









**Enjeu 1 : faire le diagnostic de NSTI et poser l'indication chirurgicale**

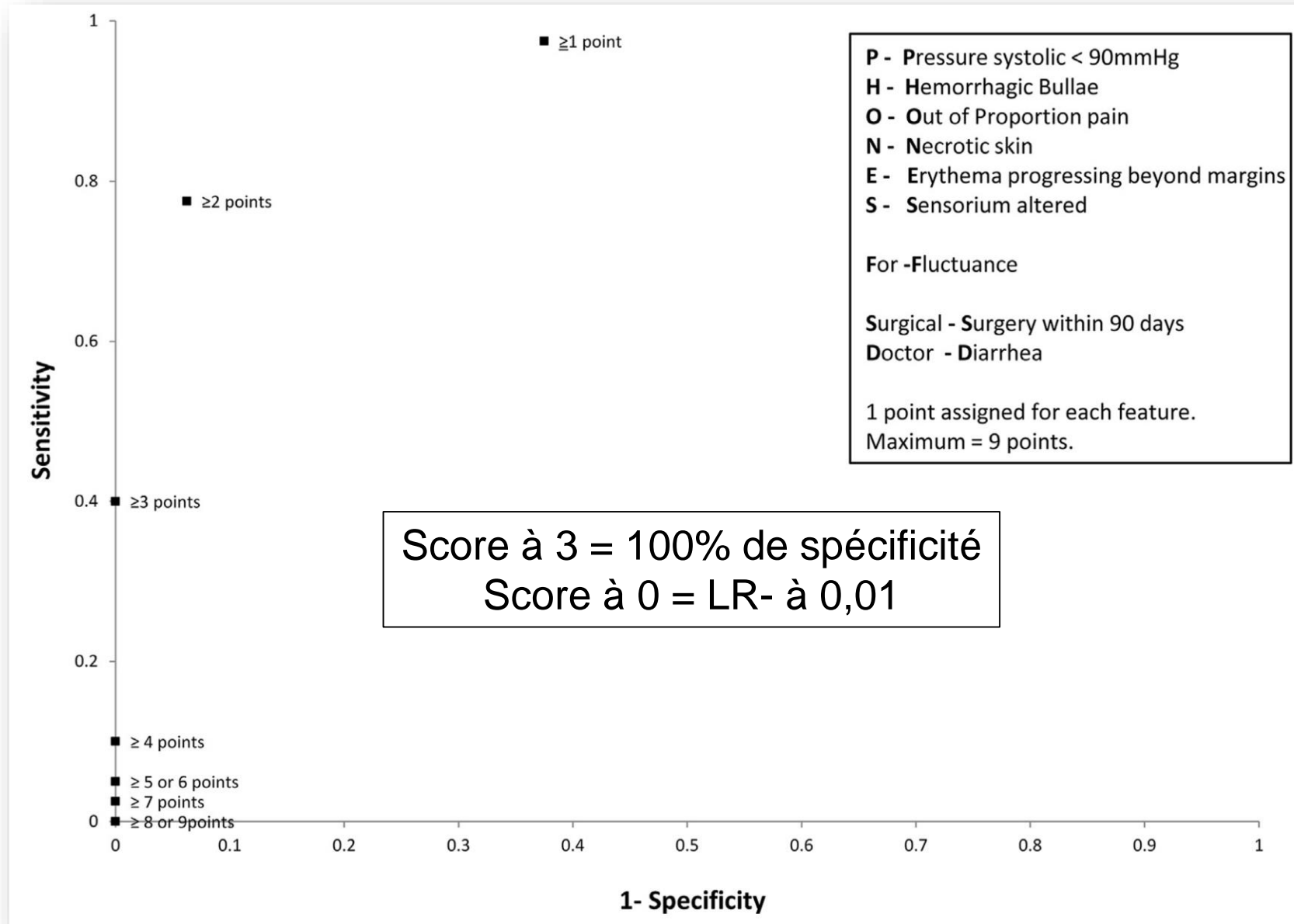


## Diagnostic Accuracy of History and Physical Examination Findings in Distinguishing Necrotizing Fasciitis from Cellulitis

| History  | Sensitivity | Specificity | PPV  | NPV   | LR+  | LR-  |
|--|-------------|-------------|------|-------|------|------|
| Subjective fever                                 | 0.45        | 0.68        | 0.41 | 0.71  | 1.38 | 0.81 |
| Chills   | 0.33        | 0.66        | 0.33 | 0.66  | 0.96 | 1.01 |
| Shortness of breath                              | 0.3         | 0.85        | 0.5  | 0.708 | 2.0  | 0.82 |
| Skin swelling                                    | 0.6         | 0.08        | 0.27 | 0.30  | 0.66 | 4.57 |
| Pain   | 0.75        | 0.1         | 0.29 | 0.44  | 0.83 | 2.5  |
| Pain out of proportion ←                         | 0.4         | 0.91        | 0.7  | 0.75  | 4.57 | 0.66 |
| Skin anesthesia                                  | 0.0         | 0.96        | 0.0  | 0.66  | 0.0  | 1.03 |
| Surgery within 90 days ←                         | 0.35        | 0.95        | 0.78 | 0.75  | 7.0  | 0.68 |
| Nausea and vomiting                              | 0.33        | 0.86        | 0.54 | 0.72  | 2.36 | 0.78 |
| Diarrhea ←                                       | 0.075       | 0.98        | 0.75 | 0.68  | 6.0  | 0.93 |
| Physical examination                             | Sensitivity | Specificity | PPV  | NPV   | LR+  | LR-  |
| Erythema   | 0.85        | 0.05        | 0.31 | 0.4   | 0.89 | 3    |
| Erythema progressive beyond margins ←            | 0.43        | 0.86        | 0.61 | 0.75  | 3.09 | 0.67 |
| Tenderness                                       | 0.73        | 0.16        | 0.3  | 0.54  | 0.87 | 1.69 |
| Swelling   | 0.7         | 0.05        | 0.27 | 0.25  | 0.74 | 6.0  |
| Local warmth                                     | 0.35        | 0.28        | 0.19 | 0.46  | 0.48 | 2.36 |
| Fluid-filled vesicles (ulcers, blisters, bullae) | 0.3         | 0.75        | 0.38 | 0.68  | 1.2  | 0.93 |
| Skin fluctuance ←                                | 0.13        | 0.98        | 0.71 | 0.69  | 5.0  | 0.9  |
| Skin induration                                  | 0.1         | 0.91        | 0.36 | 0.67  | 1.14 | 0.99 |
| Hemorrhagic bullae ←                             | 0.1         | 0.99        | 0.8  | 0.69  | 8.0  | 0.91 |
| Skin anesthesia                                  | 0.0         | 0.98        | 0.0  | 0.66  | 0.0  | 1.01 |
| Crepitus   | 0.13        | 1.0         | 1.0  | 0.7   | N/A  | 0.88 |
| Necrosis ←                                       | 0.38        | 0.99        | 0.94 | 0.76  | 30.0 | 0.63 |
| Ischemia   | 0.0         | 1.0         | N/A  | 0.66  | N/A  | 1.0  |
| Cyanosis   | 0.15        | 1.0         | 1.0  | 0.7   | N/A  | 0.85 |
| Purulence  | 0.4         | 0.85        | 0.57 | 0.74  | 2.67 | 0.71 |
| Altered LOC                                      | 0.25        | 0.93        | 0.63 | 0.71  | 3.33 | 0.81 |



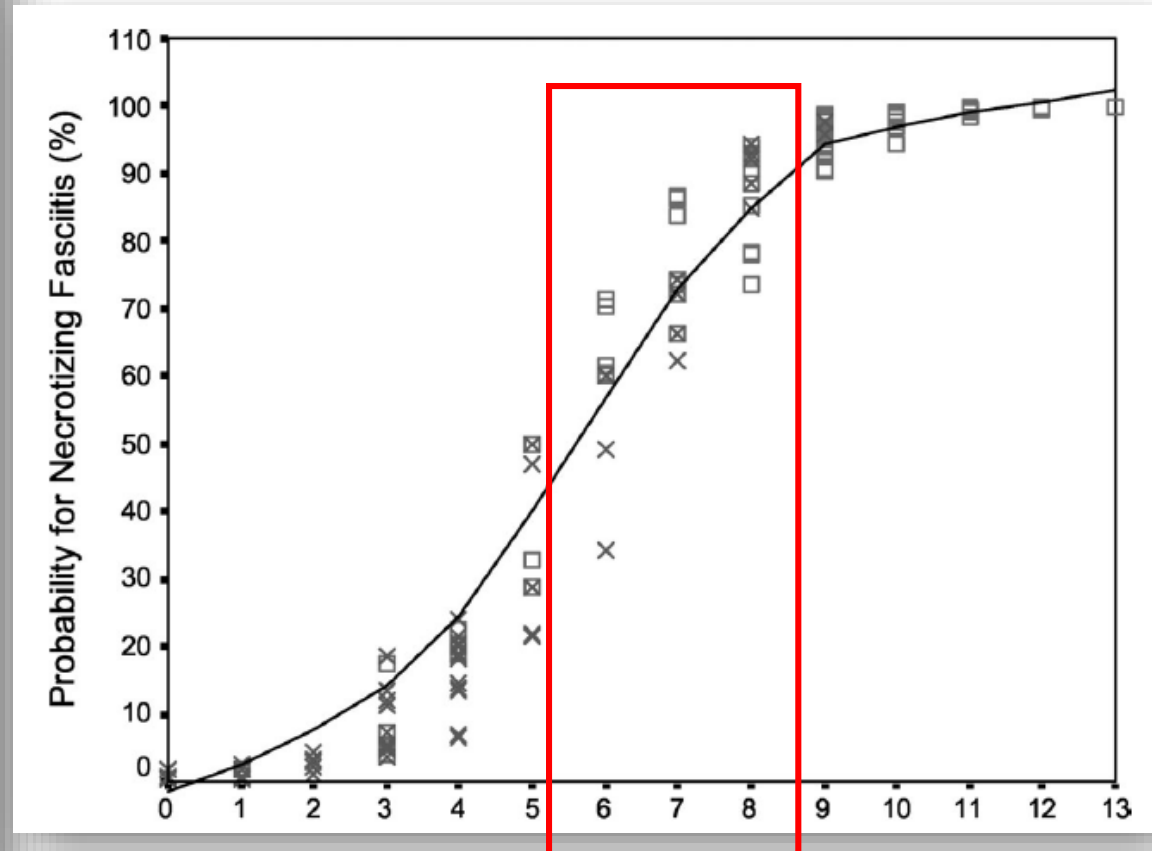
# Le score clinique « Phones for surgical doctor »



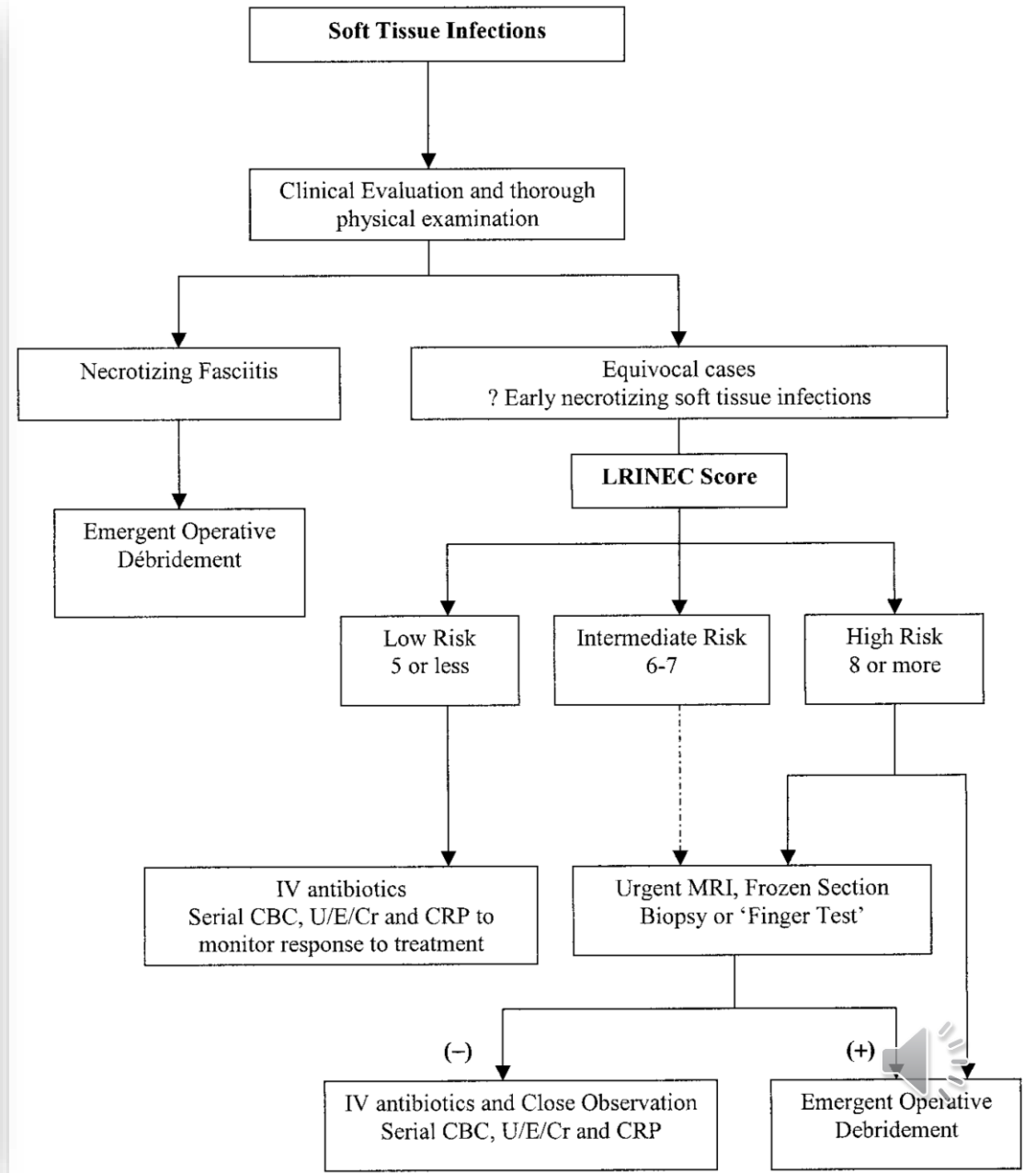
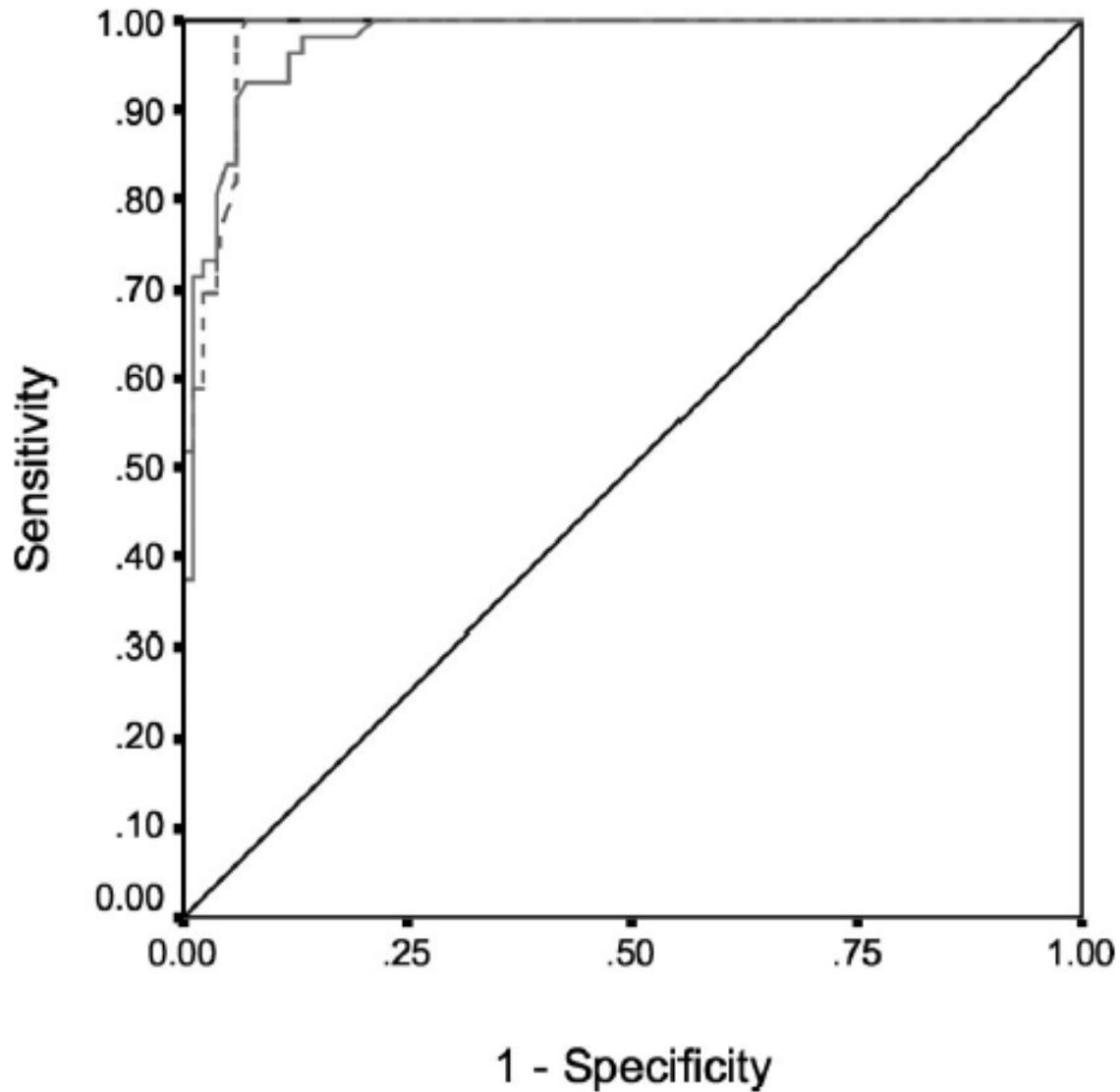
# Le score biologique LRINEC

Table 2. Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score

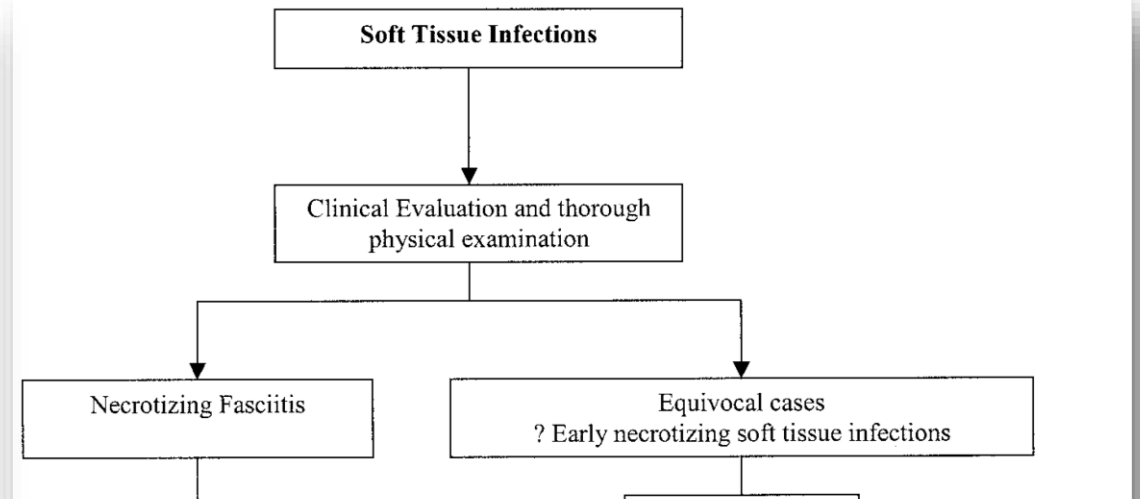
| Variable, Units                             | $\beta$ | Score |
|---|---------|-------|
| C-Reactive Protein, mg/L                    |         |       |
| <150  | 0       | 0     |
| $\geq 150$                                  | 3.5     | 4     |
| Total white cell count, per mm <sup>3</sup> |         |       |
| <15   | 0       | 0     |
| 15–25                                       | 0.5     | 1     |
| >25   | 2.1     | 2     |
| Hemoglobin, g/dL                            |         |       |
| >13.5                                       | 0       | 0     |
| 11–13.5                                     | 0.6     | 1     |
| <11   | 1.8     | 2     |
| Sodium, mmol/L                              |         |       |
| $\geq 135$                                  | 0       | 0     |
| <135  | 1.8     | 2     |
| Creatinine, $\mu\text{mol/L}$               |         |       |
| $\leq 141$                                  | 0       | 0     |
| >141  | 1.8     | 2     |
| Glucose, mmol/L                             |         |       |
| $\leq 10$                                   | 0       | 0     |
| >10   | 1.2     | 1     |



# ROC Curve

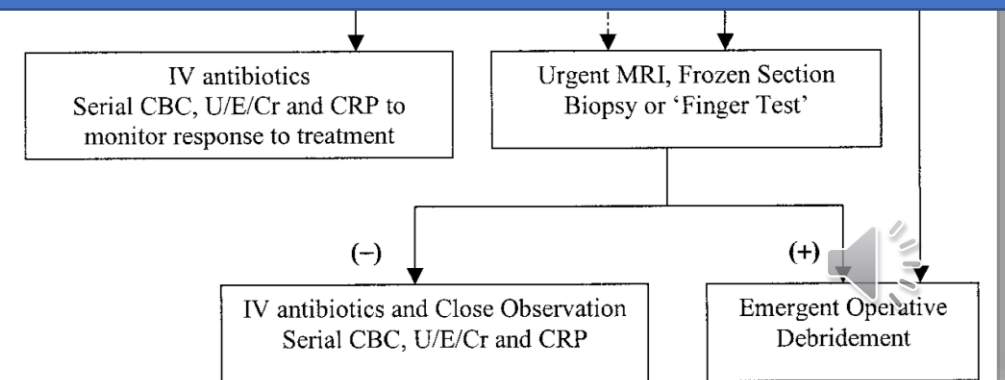
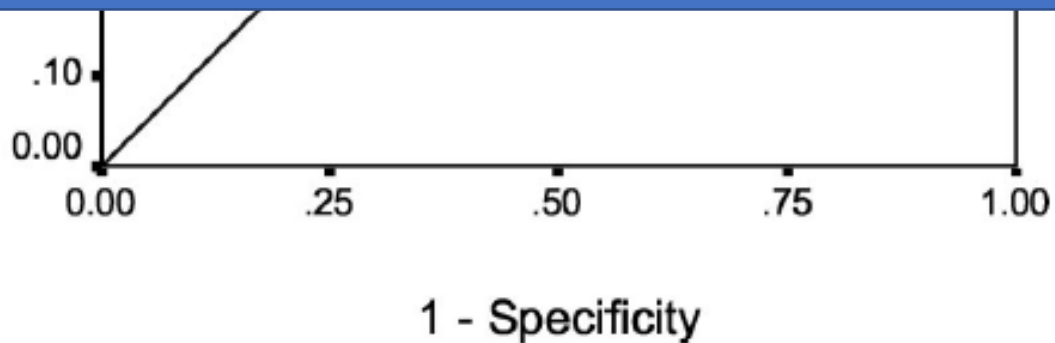


## ROC Curve

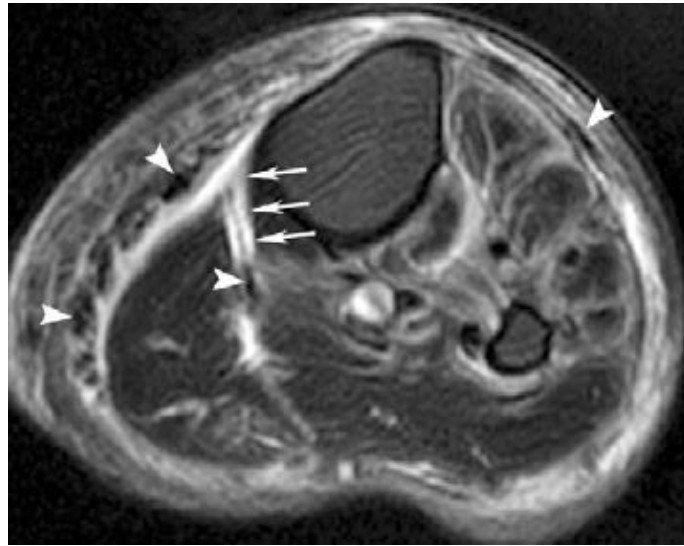


## Quelques drapeaux rouges supplémentaires :

- Etat de choc : défaillances viscérales, lactates
- CPK
- Prise de pression dans les loges



# Les données d'imagerie évocatrices de fasciite nécrosante



*Kim KT et al. Radiology. 2011*


TDM  
 Epaissement des fascias  
 Absence de réhaussement à l'injection  
*Carbonetti F et al. Radiol Med. 2016*

## Prevalences of MR Findings in NIF and Non-NIF Patient Groups

| MR Sequence and Finding                                  | NIF Group (n = 7) | Non-NIF Group (n = 23) | P Value           |
|--|-------------------|------------------------|-------------------|
| <b>T2-weighted imaging*</b>                              |                   |                        |                   |
| Signal intensity   |                   |                        | .009 <sup>†</sup> |
| Low  | 1 (14)            | 0 (0)                  |                   |
| High   | 4 (57)            | 23 (100)               |                   |
| Mixed high and low                                       | 2 (29)            | 0 (0)                  |                   |
| Signal intensity thickness                               |                   |                        | .025 <sup>†</sup> |
| Thin (<3 mm)   | 1 (14)            | 16 (70)                |                   |
| Thick (≥3 mm)  | 6 (86)            | 7 (30)                 |                   |
| Pattern of abnormal signal intensity in muscle           |                   |                        | .38               |
| No abnormality   | 1 (14)            | 14 (61)                |                   |
| Peripheral bandlike high signal intensity                | 5 (71)            | 5 (22)                 |                   |
| Patchy high signal intensity                             | 1 (14)            | 4 (17)                 |                   |
| Degree of deep fascia involvement <sup>‡</sup>           |                   |                        | .007 <sup>†</sup> |
| Partial  | 0 (0)             | 14 (61)                |                   |
| Extensive  | 7 (100)           | 9 (39)                 |                   |
| Degree of compartment involvement                        |                   |                        | .009 <sup>†</sup> |
| Less than three compartments                             | 1 (14)            | 17 (74)                |                   |
| Three or more compartments                               | 6 (86)            | 6 (26)                 |                   |
| <b>Contrast-enhanced T1-weighted imaging<sup>§</sup></b> |                   |                        |                   |
| Contrast enhancement pattern of abnormal deep fascia     |                   |                        | .013 <sup>†</sup> |
| No enhancement   | 1 (14)            | 2 (9)                  |                   |
| Enhancement  | 1 (14)            | 17 (74)                |                   |
| Enhancement with nonenhancing portion                    | 5 (71)            | 4 (17)                 |                   |
| Contrast enhancement pattern in muscle                   |                   |                        | .397              |
| No abnormality   | 4 (57)            | 16 (70)                |                   |
| Peripheral bandlike enhancement                          | 3 (43)            | 4 (17)                 |                   |
| Patchy enhancement                                       | 0 (0)             | 3 (13)                 |                   |
| Abscess in subcutaneous fat layer                        |                   |                        | .326              |
| Present  | 2 (29)            | 11 (48)                |                   |
| Absent   | 5 (71)            | 12 (52)                |                   |



# Les données d'imagerie évocatrices de fasciite nécrosante

- Et les DHBN ?
  - Expérience du radiologue en pratique ?
    - /!\: ces infections NE SONT PAS COLLECTEES !!
  - La recherche de collection n'est pas la question posée
- L'absence de collection ne doit pas faire écarter le diagnostic de NSTIs
- L'absence de collection ne doit pas faire récuser la chirurgie
  - Rien ne doit retarder la chirurgie
- Le chirurgien est votre meilleur allié : soyez convaincant !!
  - La clinique prime !!++
  - Au moindre doute : avis chirurgical
- Au moindre doute pendant l'avis chirurgical : chirurgie 

|         |        |         |
|---------|--------|---------|
| Present | 2 (29) | 11 (48) |
| Absent  | 5 (71) | 12 (52) |



## En pratique le délai de réalisation de la chirurgie a un impact majeur sur le pronostic

| Variables   | Adjusted OR | 95% CI    | P value |
|---|-------------|-----------|---------|
| SAPS II   | 1.15        | 1.04–1.26 | 0.02    |
| Cardiovascular disease  |             |           |         |
| No  | 1           | –         |         |
| Yes   | 13.9        | 1.8–106   | 0.01    |
| Localization  |             |           |         |
| Extremities   | 1           | –         |         |
| Abdominoperineal  | 15.1        | 1.5–149   | 0.002   |
| Time from first signs to diagnosis; $n = 99^a$                              |             |           |         |
| $>72$ h   | 1           | –         |         |
| $\leq 72$ h   | 0.09        | 0.01–0.68 | 0.02    |
| Time from diagnosis to surgery in patients with septic shock;<br>$n = 33^b$ |             |           |         |
| $\leq 14$ h   | 1           | –         |         |
| $>14$ h   | 34.5        | 2.05–572  | 0.007   |

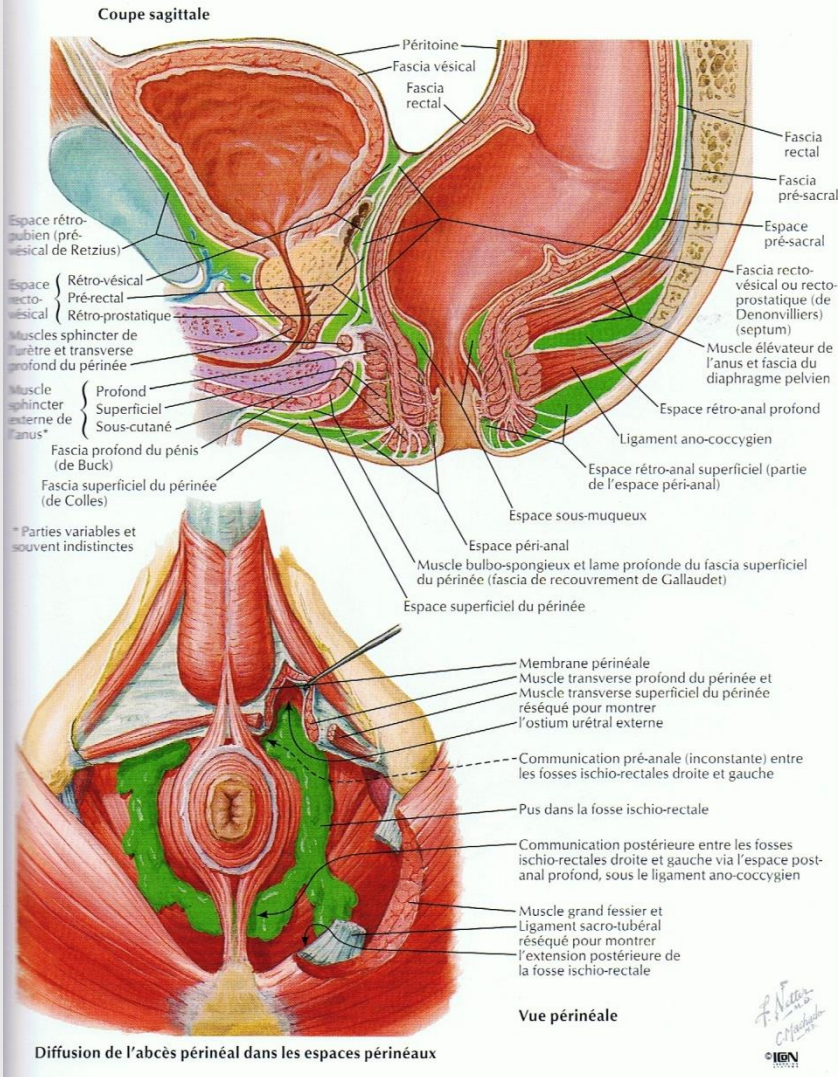


# La conception classique : un geste radical « carcinologique »



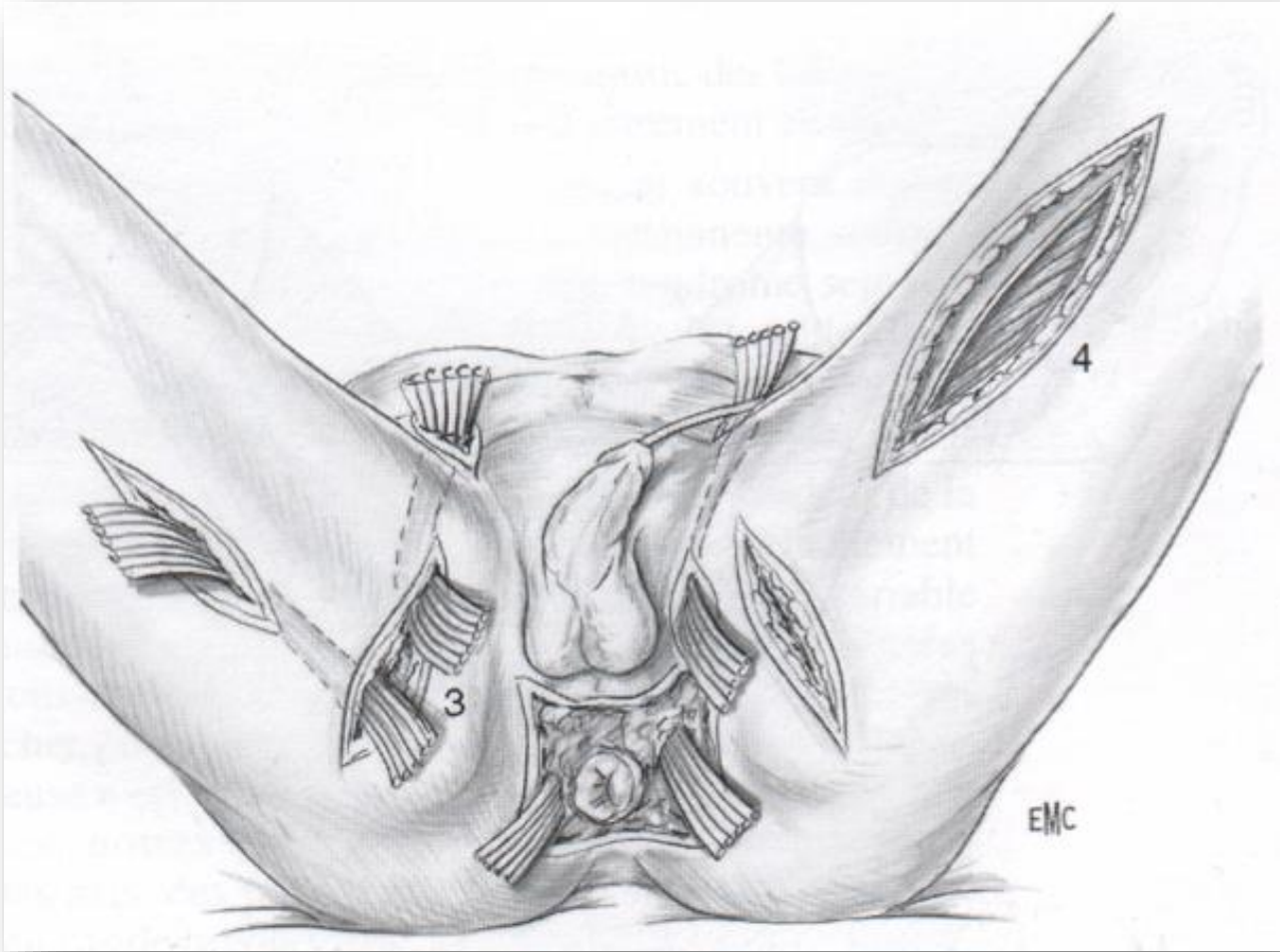
# Quelques plans de clivage anatomiques à connaître : extension/porte d'entrée

## Espaces périnéo-pelviens réels et potentiels

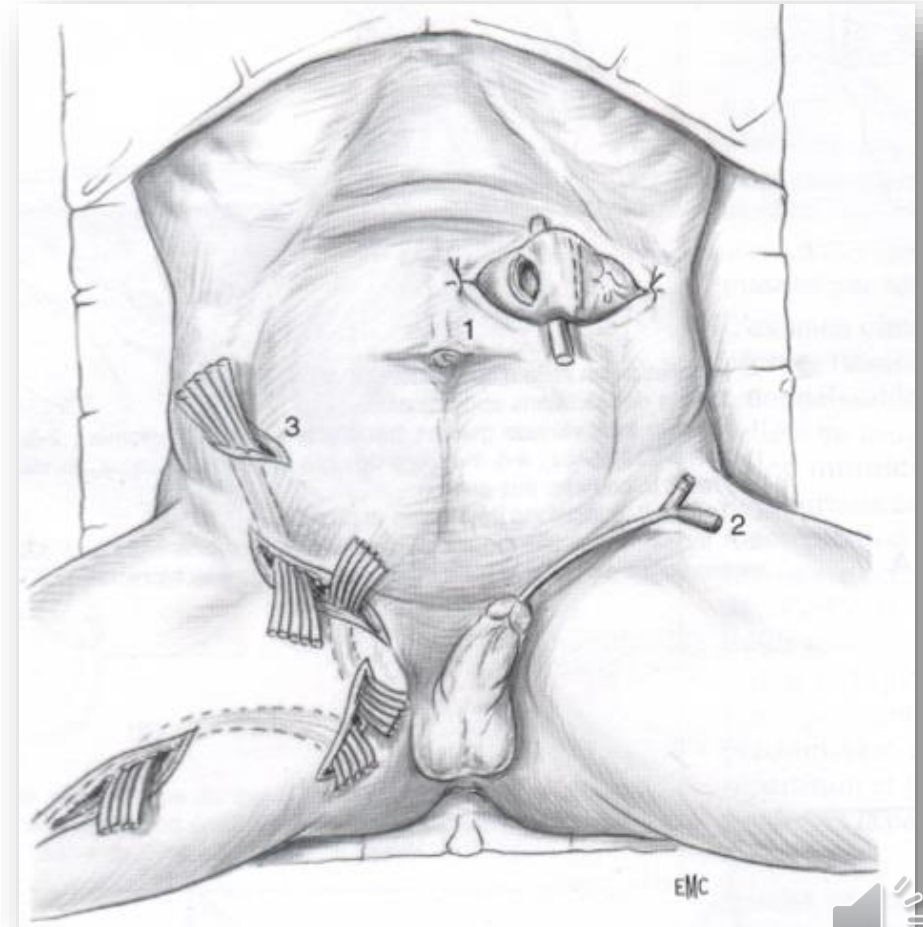




# Chirurgie : localisation périnéale



Drainage par mise en place de lames de Delbet



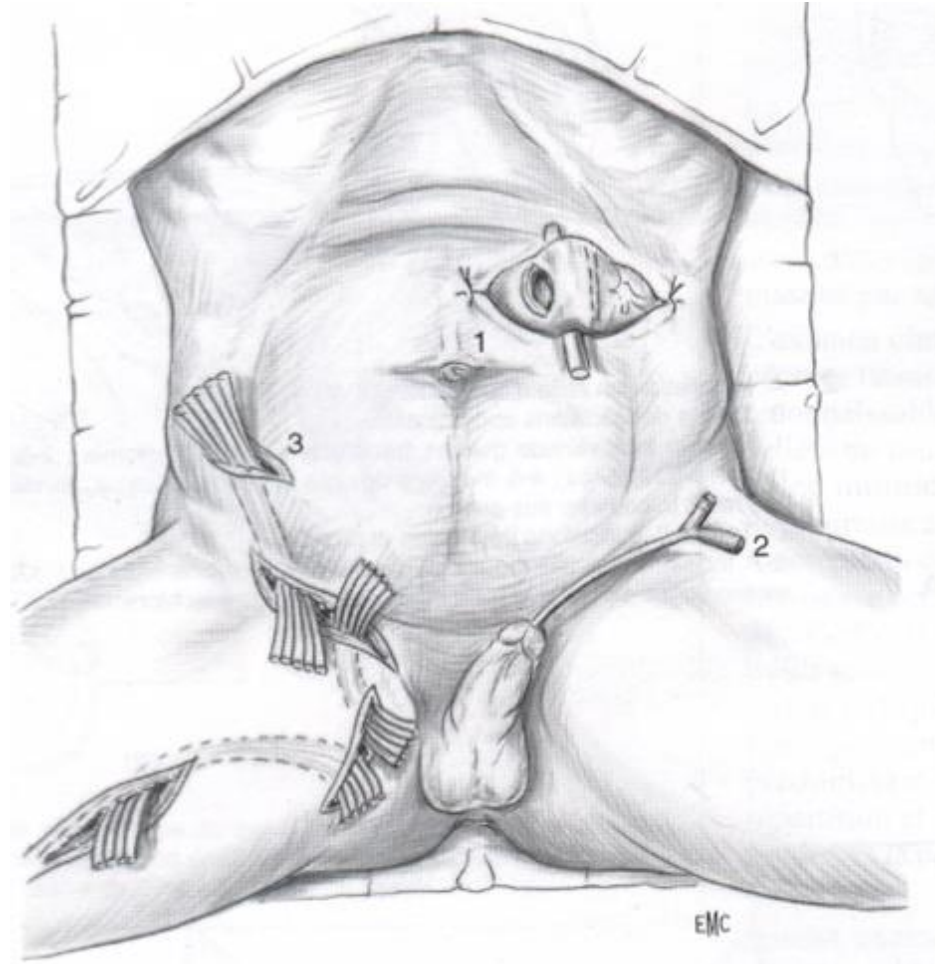
Dérivation urinaire et digestive

Dérivation urinaire :

- Sonde vésicale

Dérivation digestive :

- Colostomie de protection (transverse gauche)
- Collecteur fécal







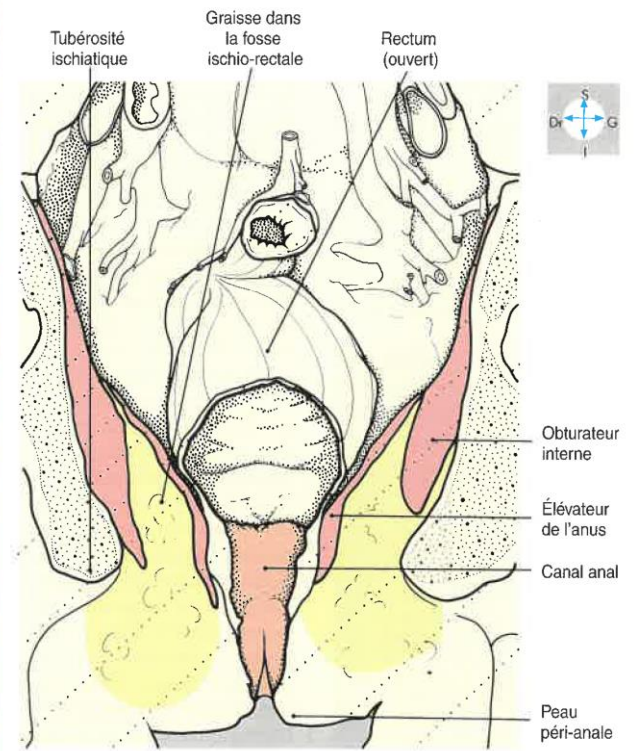
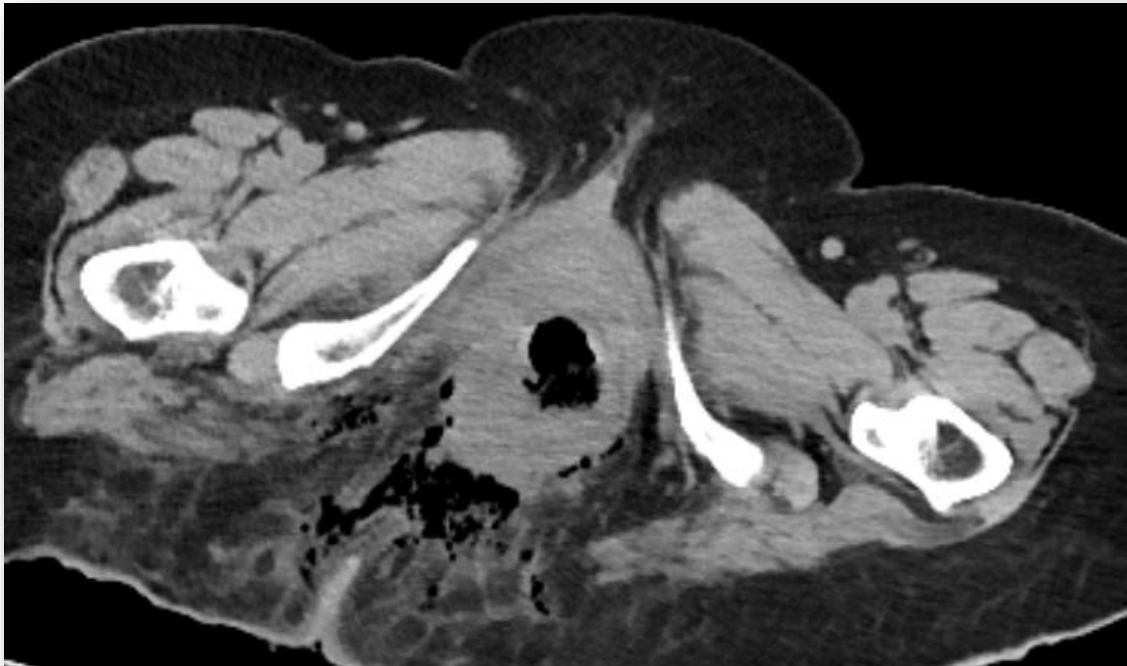


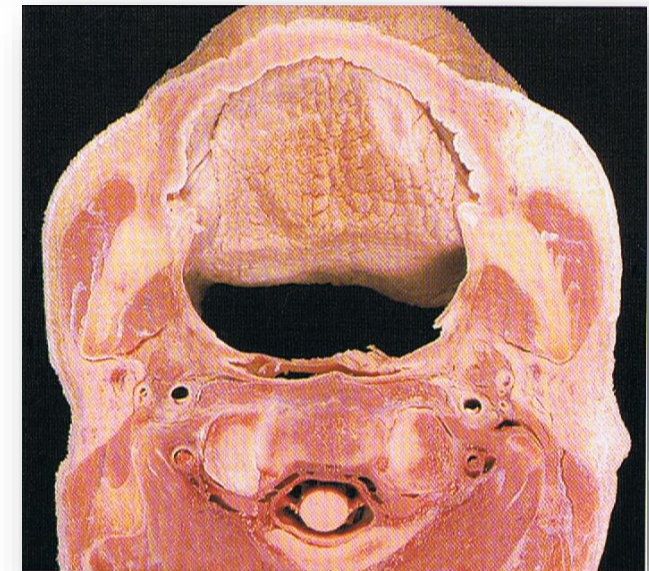
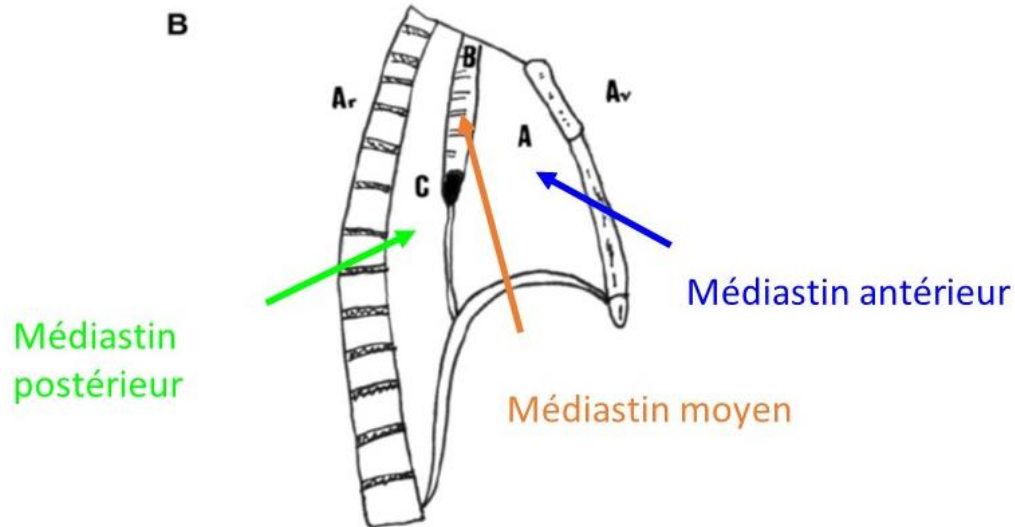
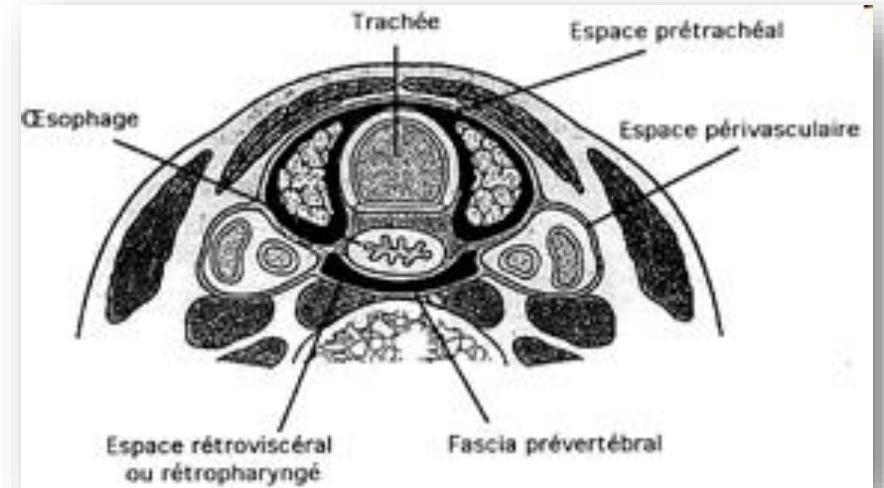
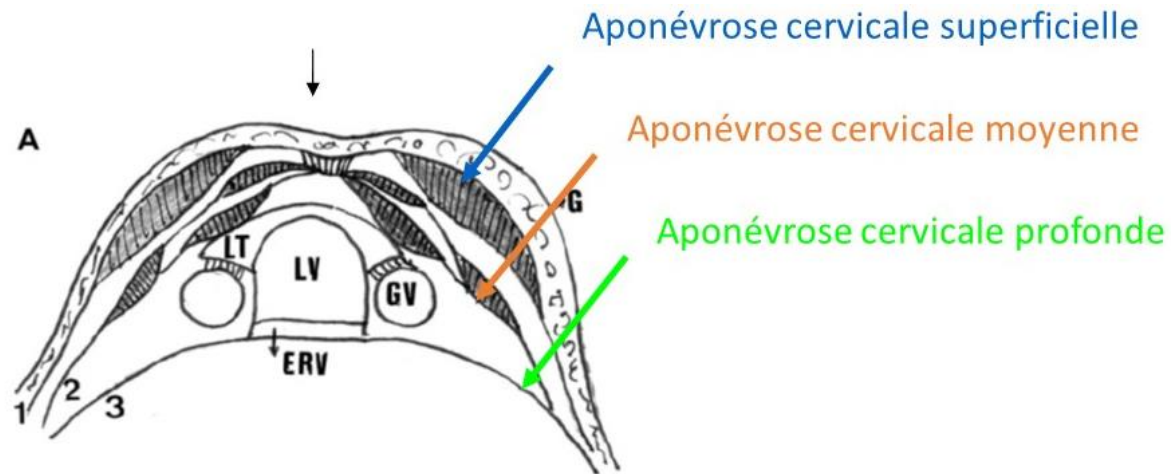
Fig. 5.34 Coupe frontale dans le canal anal et les fosses ischio-rectales.

# Diagnostic différentiel

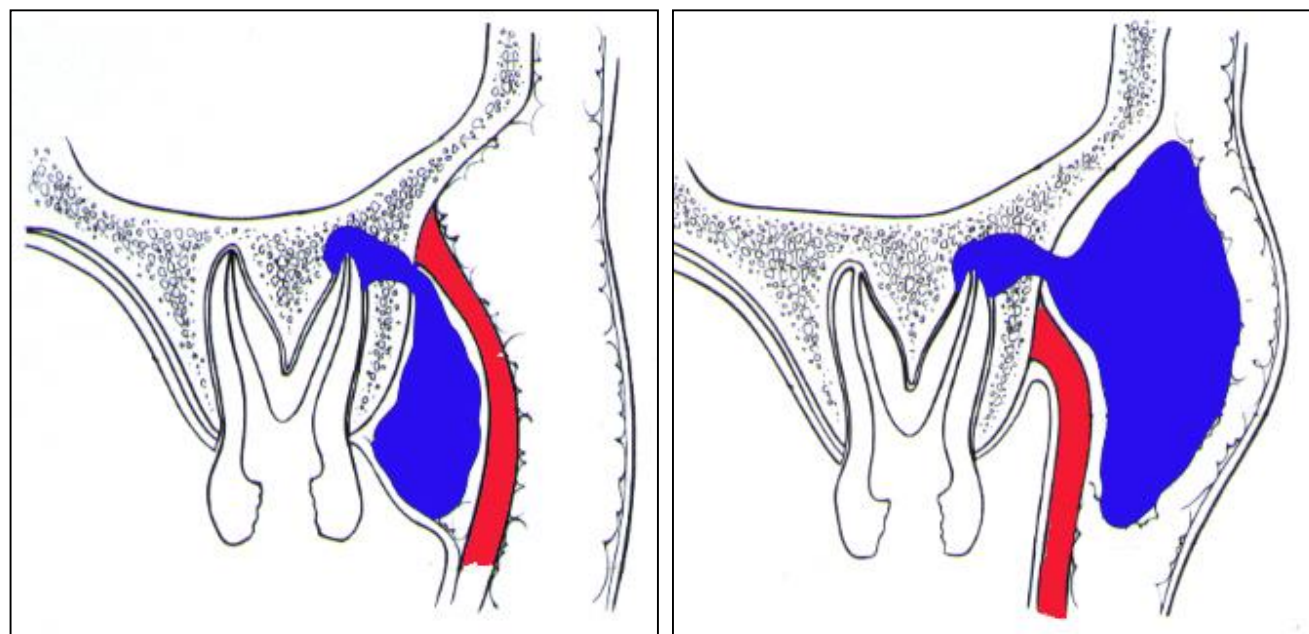




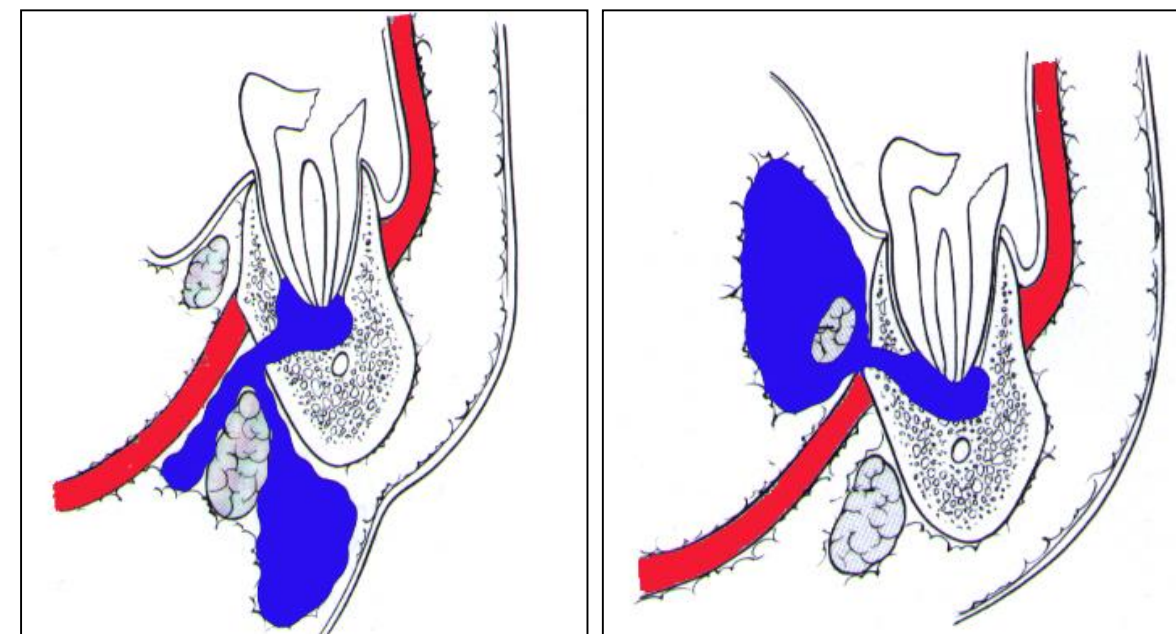
# Les multiples extensions possibles en cervical



Diffusion vestibulaire ou génienne  
La limite du muscle buccinateur



Diffusion sus ou sous mylohydiene  
Cellulites péri-mandibulaires



# Infections collectées vs infections « séreuses » : pas toujours évident cliniquement



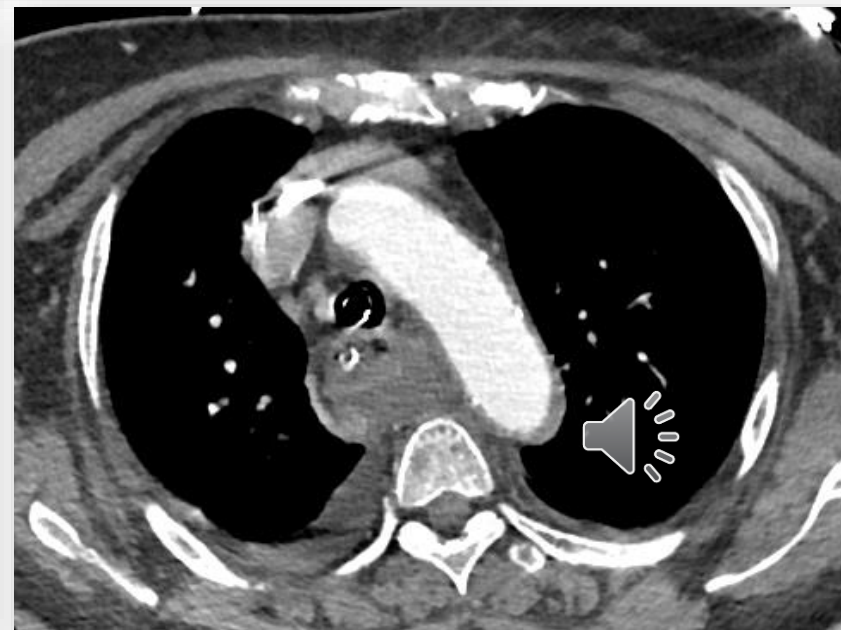
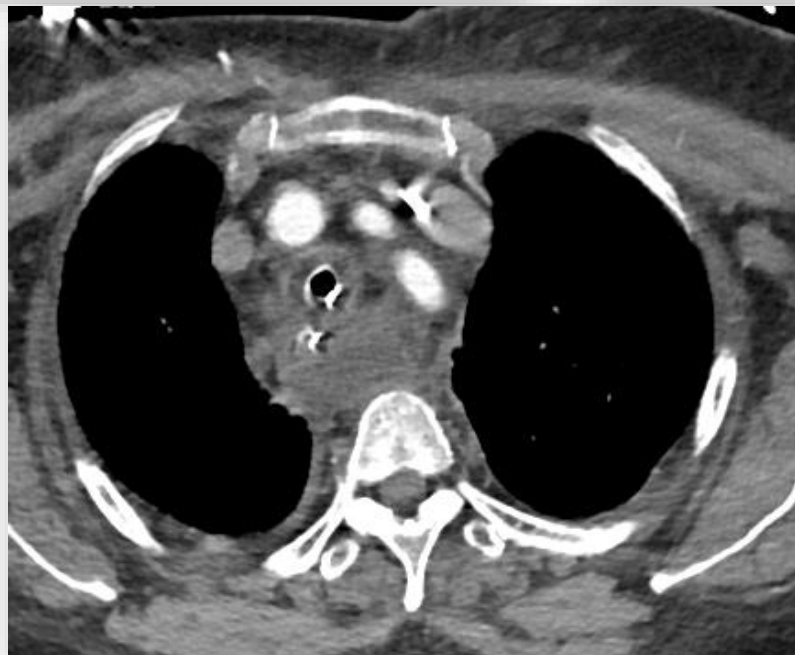
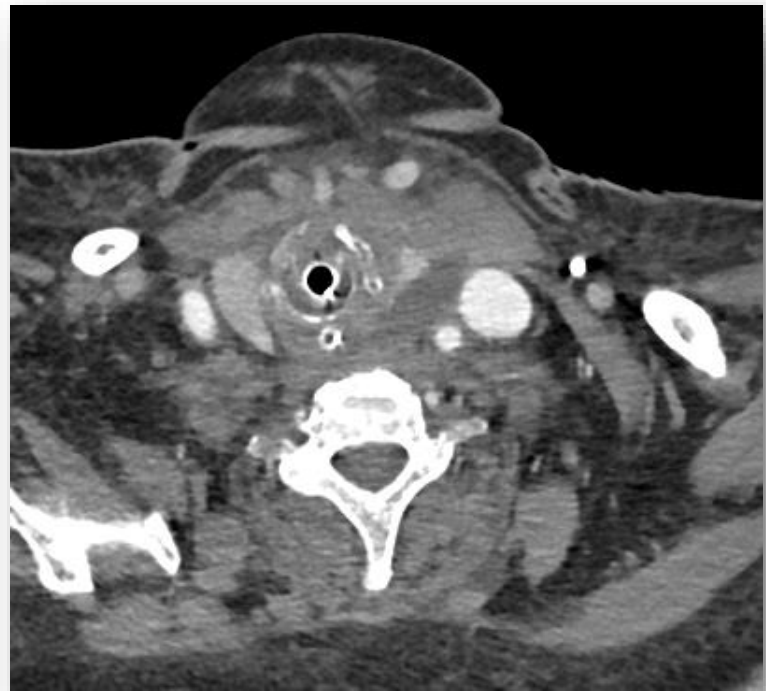
# Les signes cliniques à rechercher/évaluation de la gravité

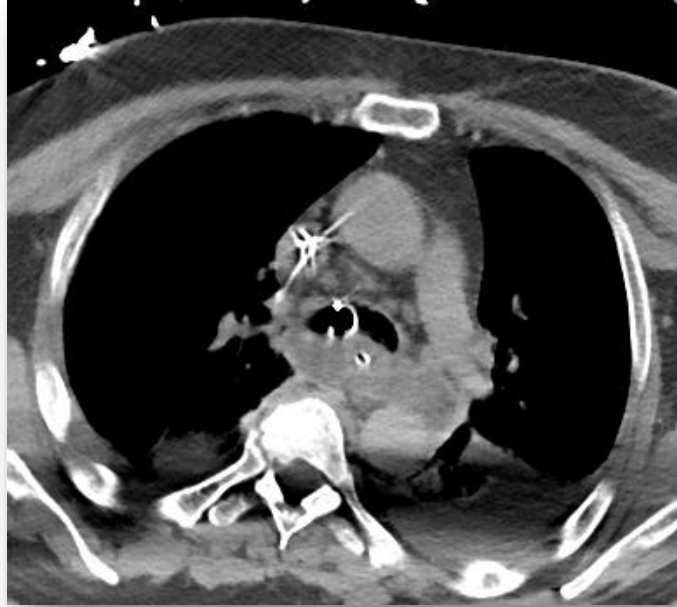
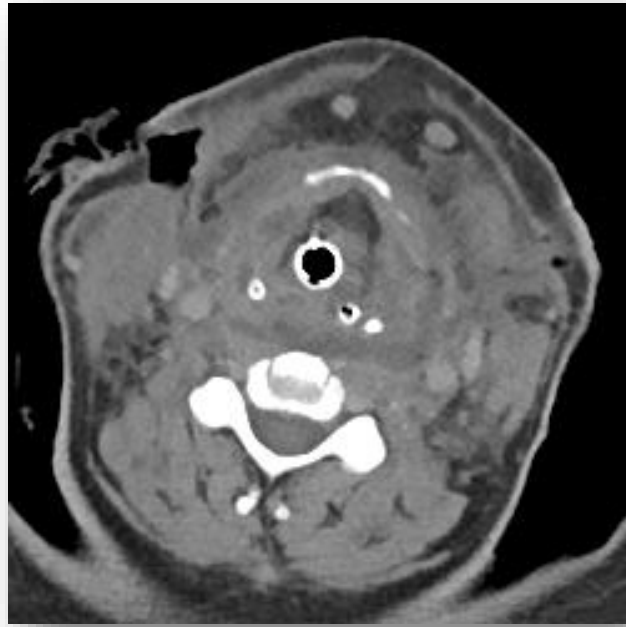
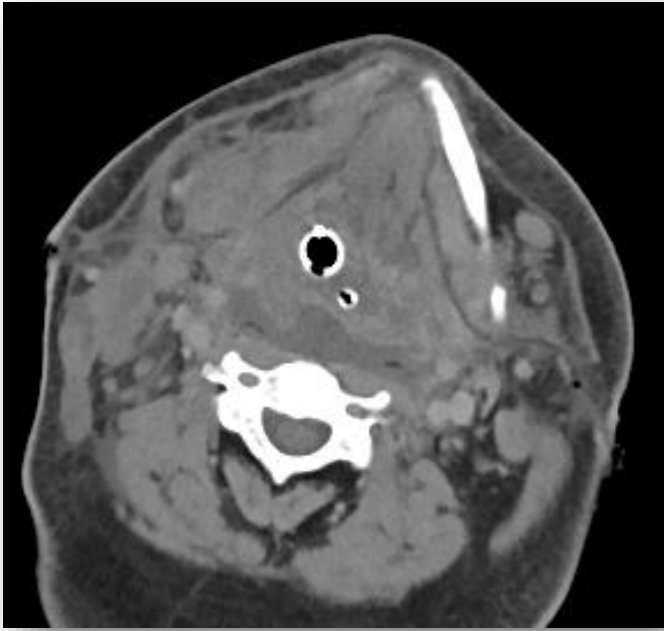
- Recherche de la porte d'entrée
  - Examen buco dentaire
  - Examen ORL amygdales/pharynx
  - Guidé par les plaintes fonctionnels et la topographie de la diffusion
- Complications « locales », en fonction de la localisation
  - Trismus : attention intubation !\
  - Dyspnée-Dysphagie : attention espace rétro pharyngé (cf cours physiopath/diffusion)
  - Thromboses vasculaires
    - Staphylococcie maligne et thrombose de sinus caverneux
    - Angine de Lemierre et thrombose jugulaire
- Retentissement général du sepsis
  - Plutôt rare par rapport aux complications locales (cf cours spécifique)

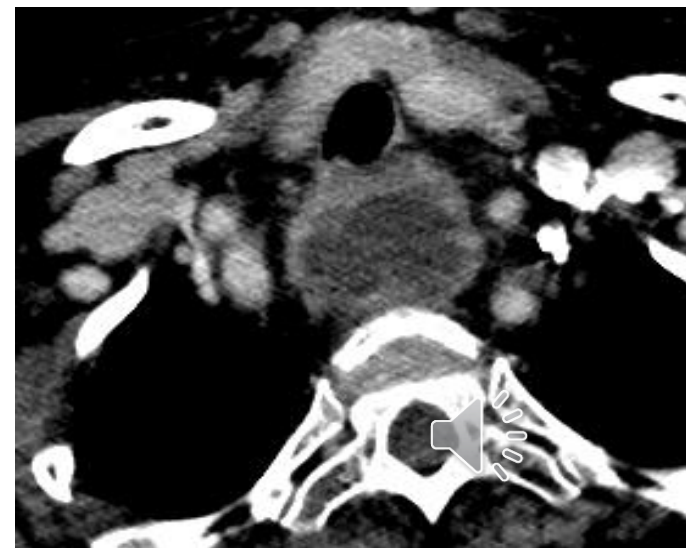
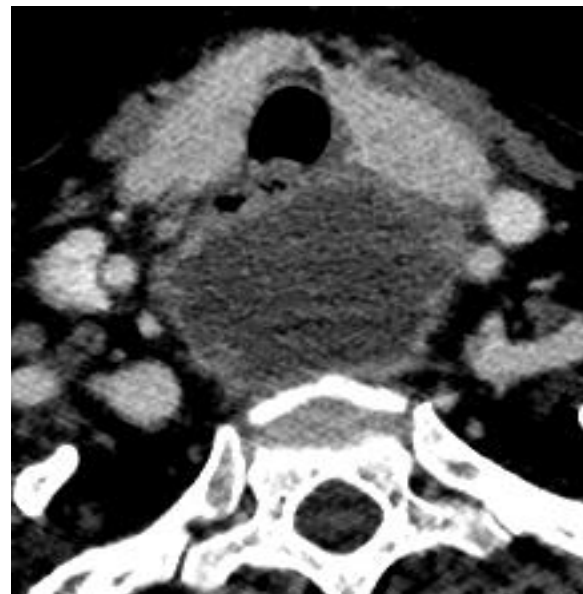
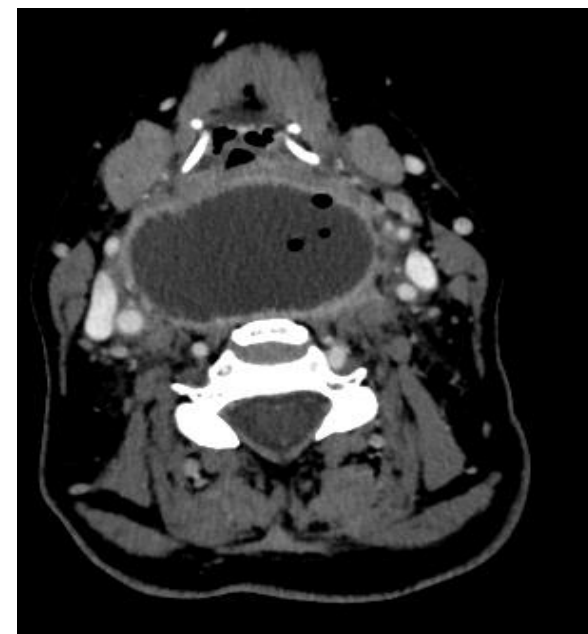
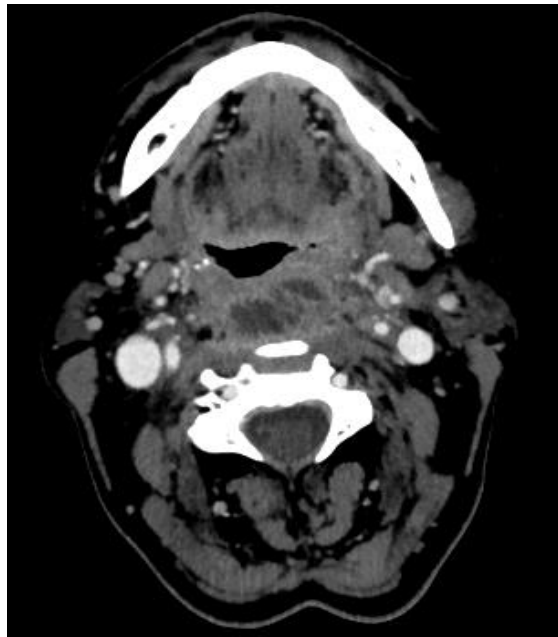


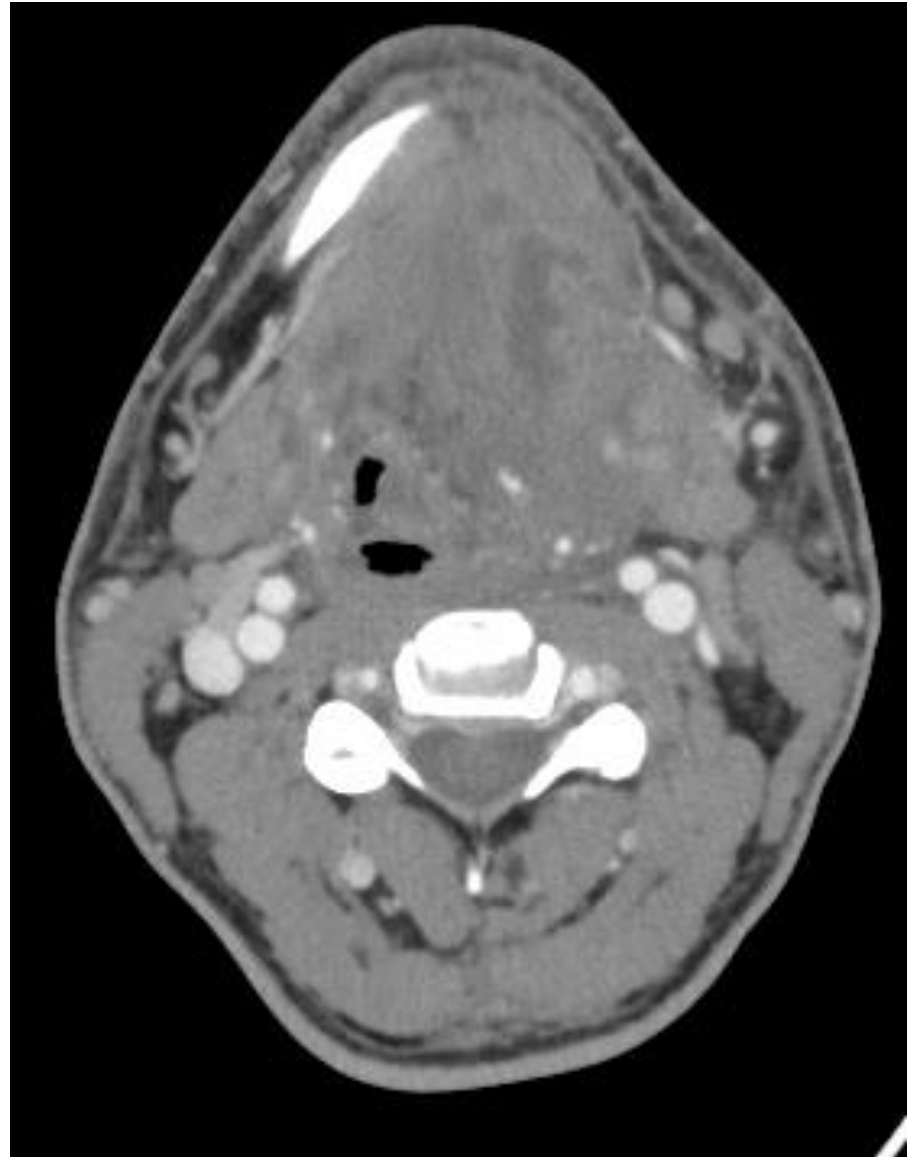
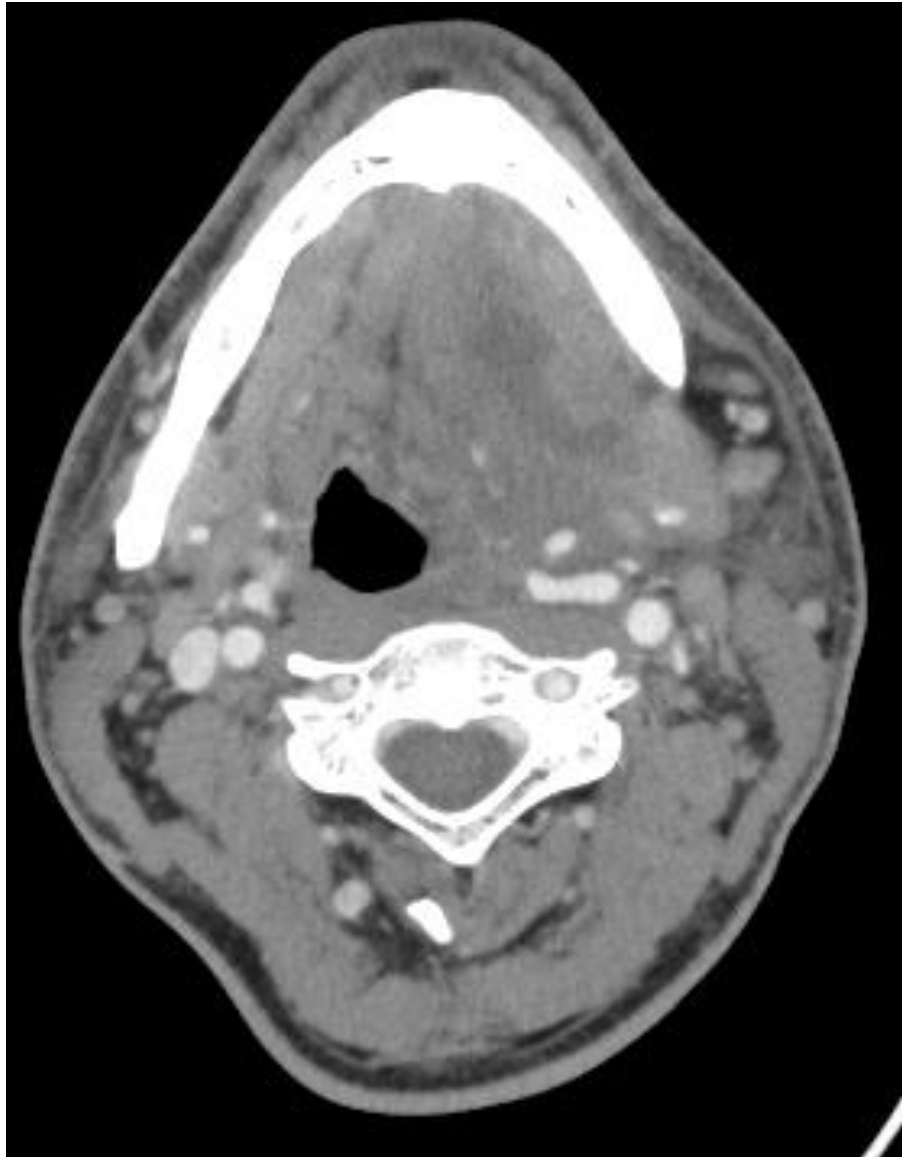
# Importance du scanner cervico thoracique : porte d'entrée, collection, extension, thromboses

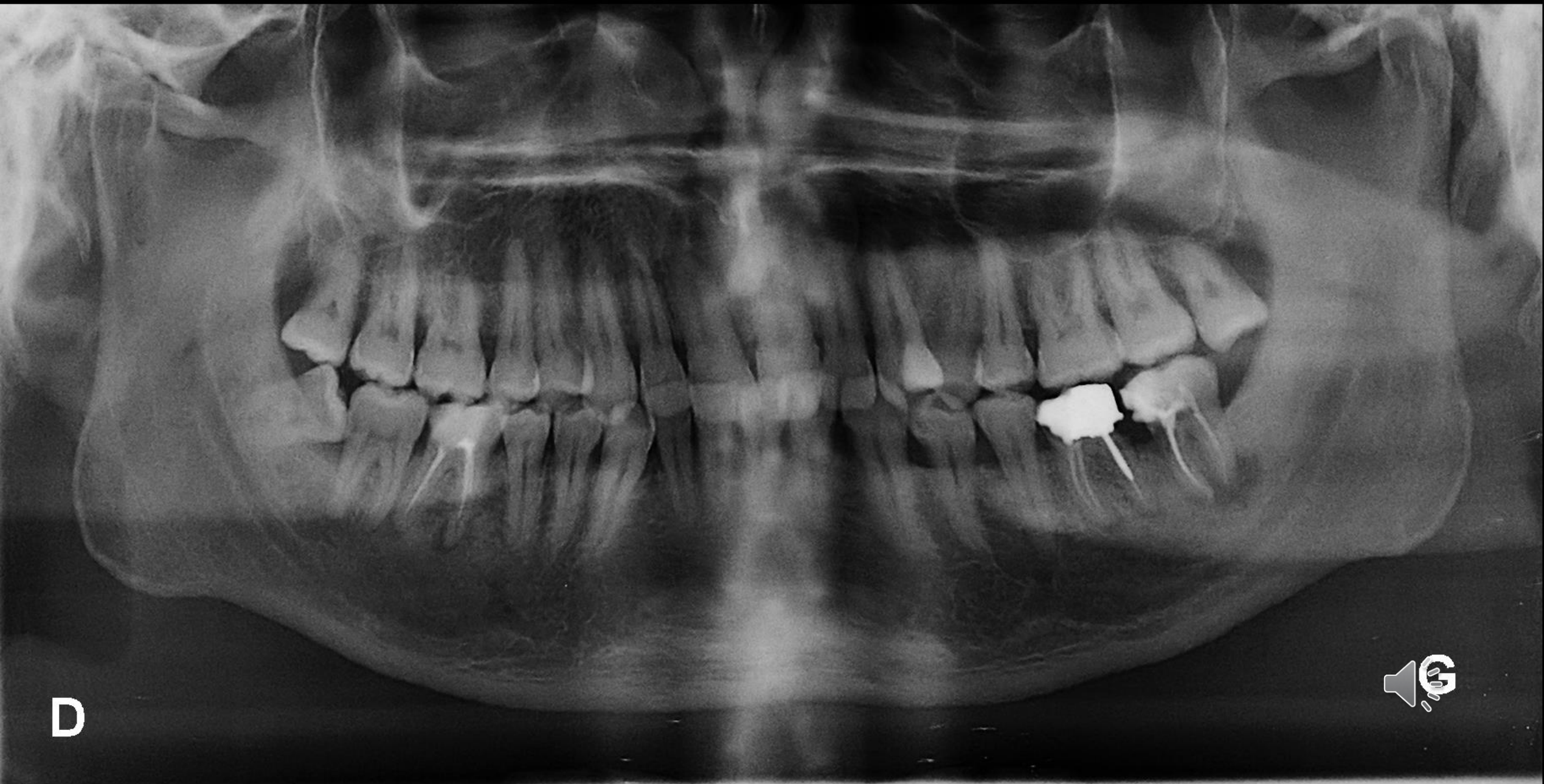












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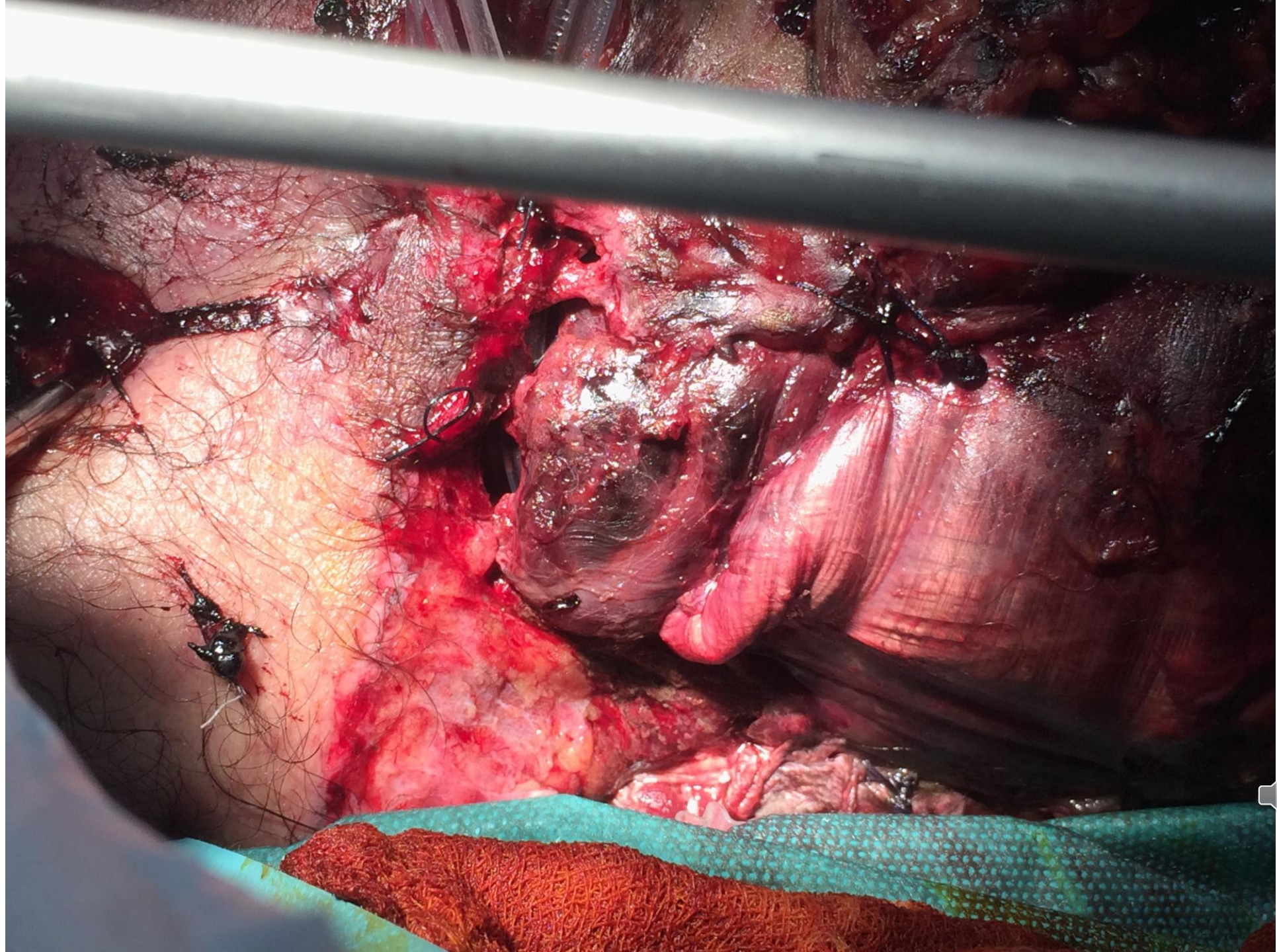


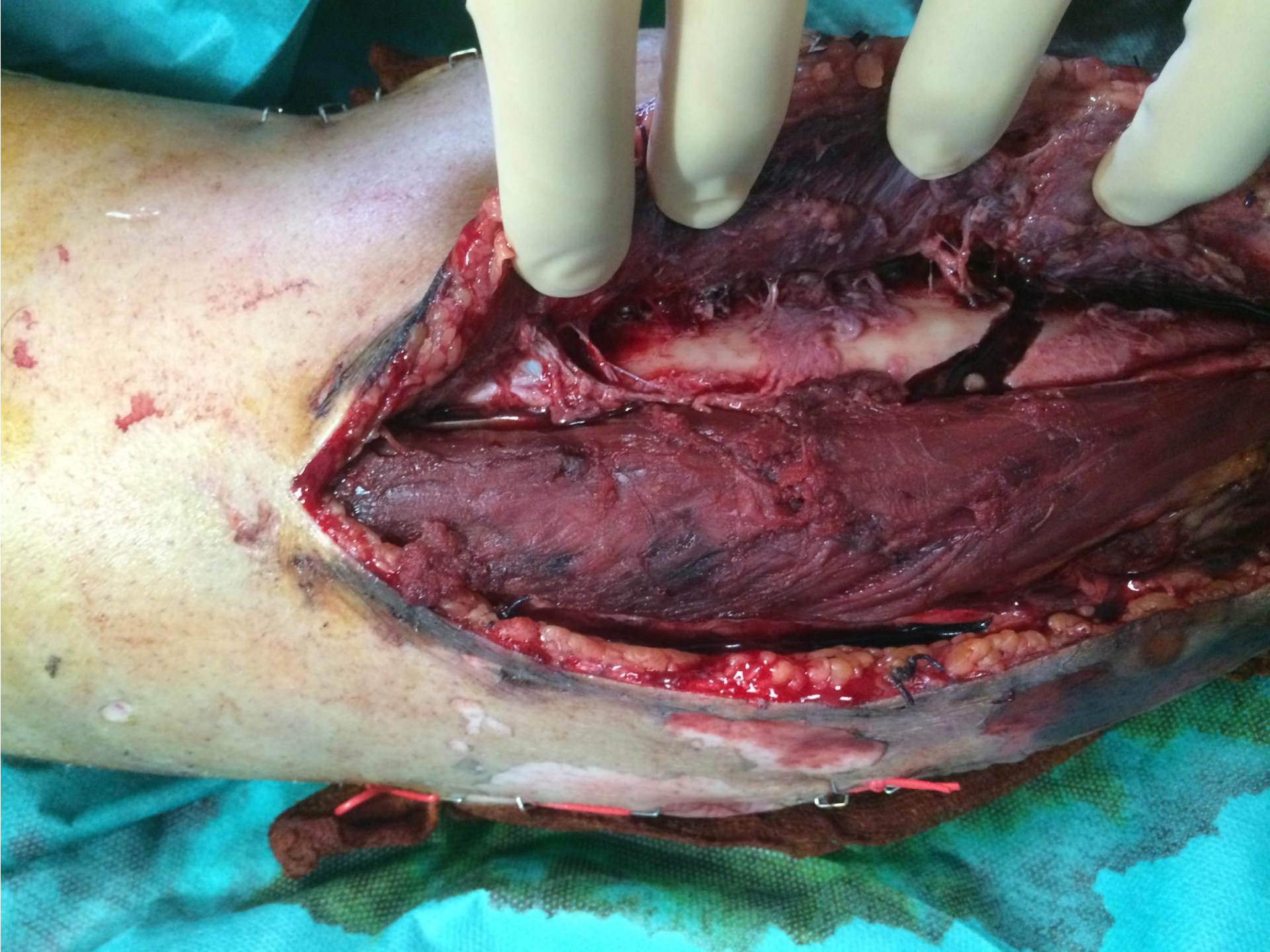
# Erysipèle vs staphylococcie maligne de la face





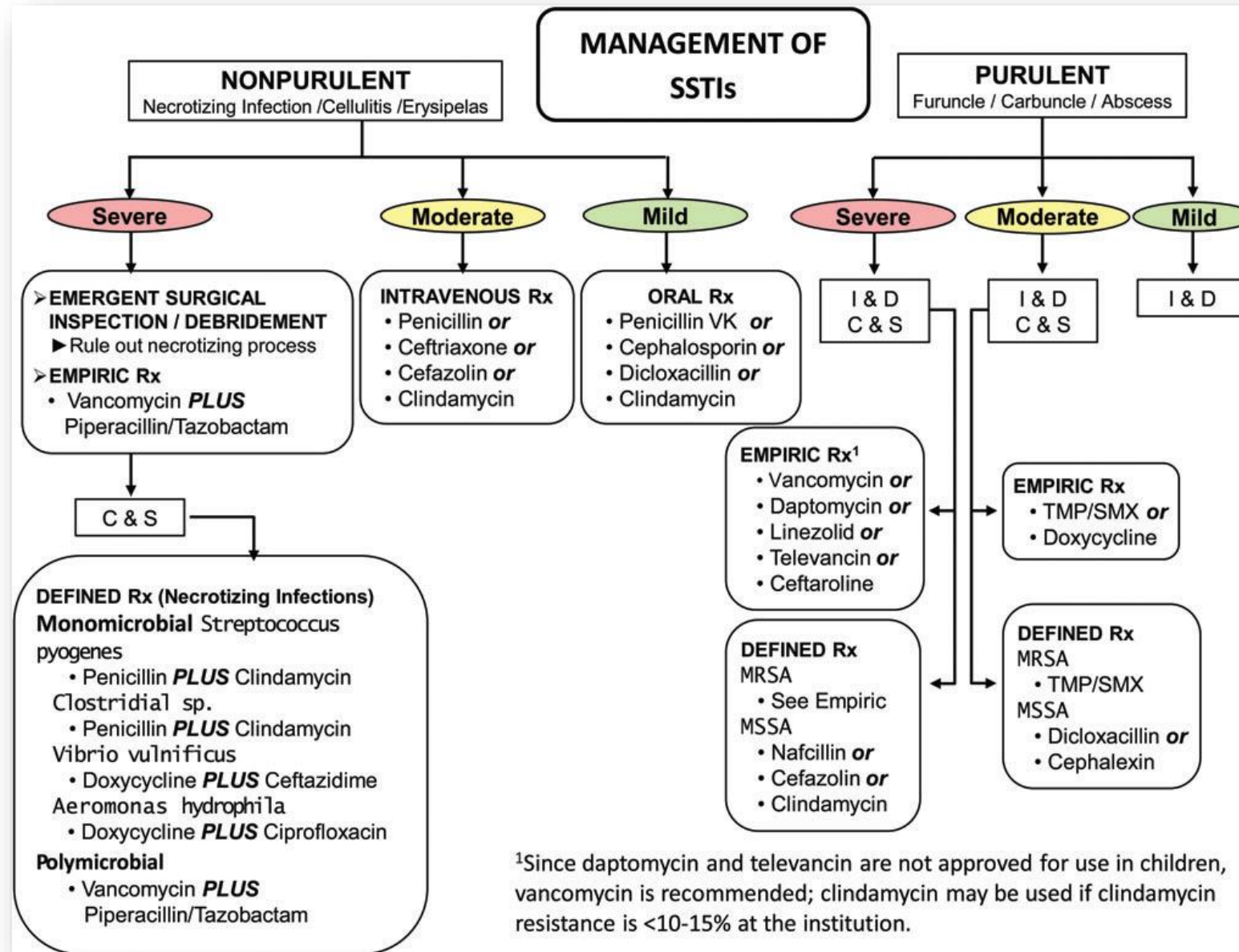








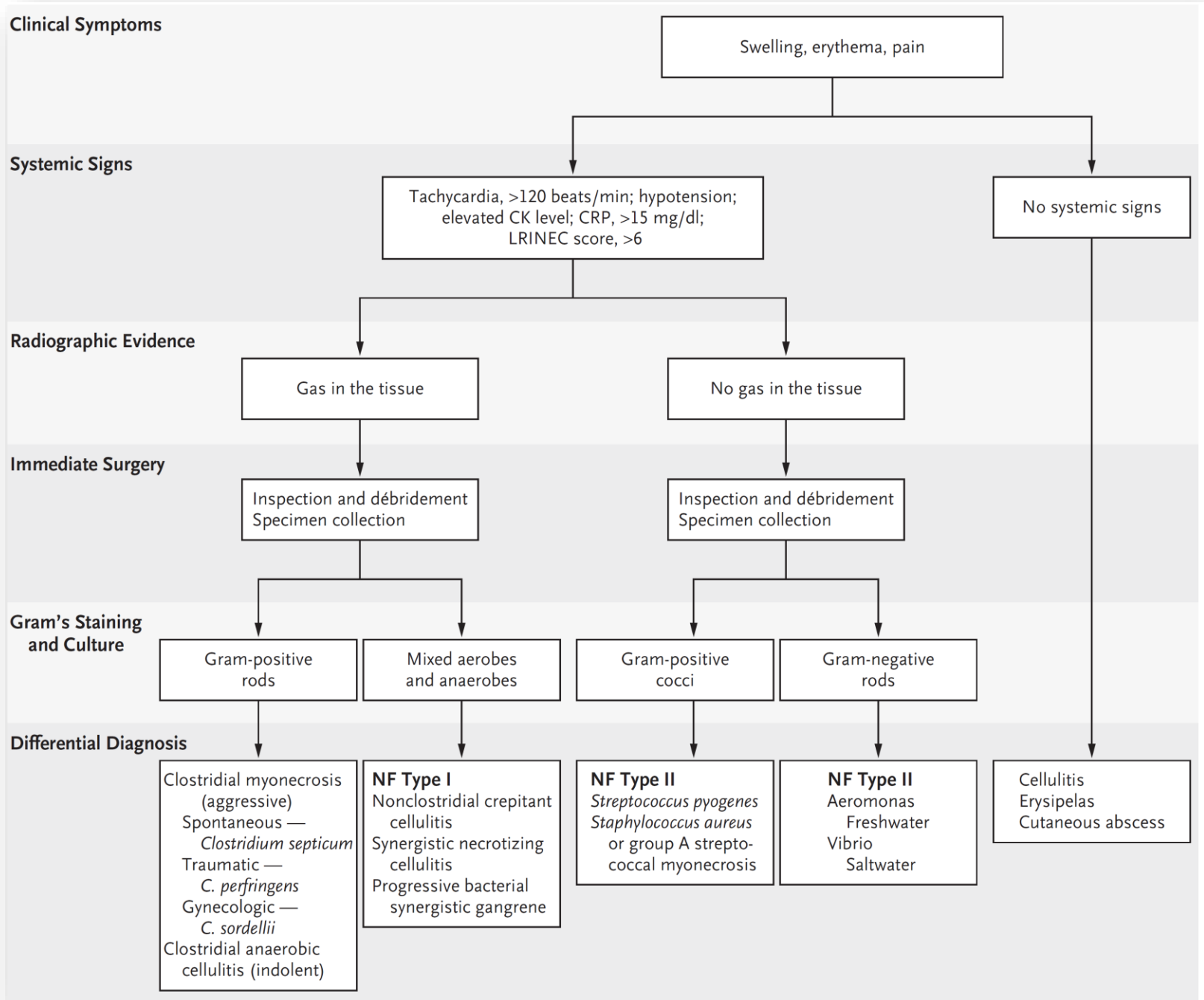
# Antibiothérapie : les recommandations de l'IDSA « polluées » par le staphylocoque



**Table 1. Factors Conferring a Predisposition to Specific Necrotizing Soft-Tissue Infections.\***

| Predisposing Factor   | Clinical Syndrome  | Etiologic Agent   |
|---|--|---|
| Major penetrating trauma: crush or deeply penetrating wound   | Gas gangrene   | <i>Clostridium perfringens</i> , <i>C. histolyticum</i> , or <i>C. novyi</i>  |
| Minor penetrating trauma<br>Freshwater laceration<br>Saltwater laceration   | NF type II   | <i>Aeromonas hydrophila</i><br><i>Vibrio vulnificus</i>   |
| Minor nonpenetrating trauma: muscle strain, sprain, or contusion  | NF type II or streptococcal myonecrosis  | <i>Streptococcus pyogenes</i>   |
| Mucosal breach: mucosal tear (rectal, vaginal, urethral); gastrointestinal, genitourinary or gynecologic surgery              | NF type I  | Mixed aerobic and anaerobic organisms   |
| Skin breach<br>Varicella lesions<br>Insect bites<br>Injection drugs   | NF type II or streptococcal myonecrosis<br>NF type II or streptococcal myonecrosis<br>Gas gangrene | <i>S. pyogenes</i><br><i>S. pyogenes</i><br><i>C. perfringens</i> , <i>C. histolyticum</i> , <i>C. novyi</i> , or <i>C. sordellii</i> |
| Immunocompromised state<br>Diabetes with peripheral vascular disease<br>Cirrhosis and ingestion of raw oysters<br>Neutropenia | NF type I<br>NF type II<br>Gas gangrene  | Mixed aerobic and anaerobic organisms<br><i>V. vulnificus</i><br><i>C. septicum</i>   |
| In women: pregnancy, childbirth, abortion (spontaneous or medically induced), gynecologic procedures or surgery               | NF type II, streptococcal myonecrosis, or clostridial myonecrosis                                  | <i>S. pyogenes</i> , <i>C. perfringens</i> , or <i>C. sordellii</i>   |
| Occult factors: colonic lesions, including carcinoma  | Spontaneous gas gangrene   | <i>C. septicum</i>  |





| Sites                                     | Concentrations bactériennes par ml ou g | Rapport anaérobies/aérobies |
|---|---|-----------------------------|
| <b><u>Voies aériennes supérieures</u></b> |   |                             |
| Narine                                    | $10^3 - 10^4$                           | 3 - 5 / 1                   |
| Salive                                    | $10^8 - 10^9$                           | 1 / 1                       |
| Plaque dentaire                           | $10^{10} - 10^{11}$                     | 1 / 1                       |
| Gencive                                   | $10^{11} - 10^{12}$                     | 1000 / 1                    |
| <b><u>Tube digestif</u></b>               |   |                             |
| Estomac                                   | $10^2 - 10^5$                           | 1/ 1                        |
| Duodénum                                  | $10^2 - 10^4$                           | 1/ 1                        |
| Iléon                                     | $10^4 - 10^7$                           | 1/ 1                        |
| Colon                                     | $10^{11} - 10^{12}$                     | 1000 / 1                    |
| <b><u>Tractus Génital Féminin</u></b>     |   |                             |
| Vagin                                     | $10^8 - 10^9$                           | 3 - 5 / 1                   |
| Endocol                                   | $10^8 - 10^9$                           | 3 - 5 / 1                   |



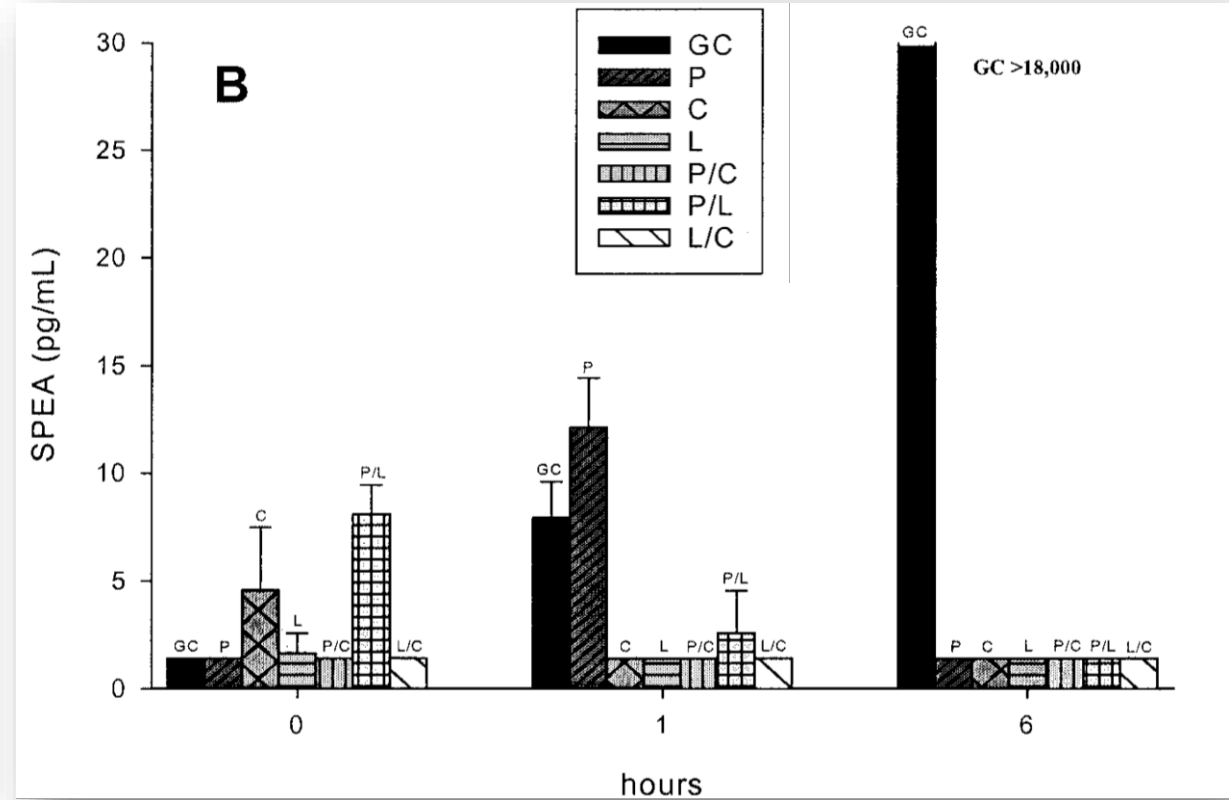
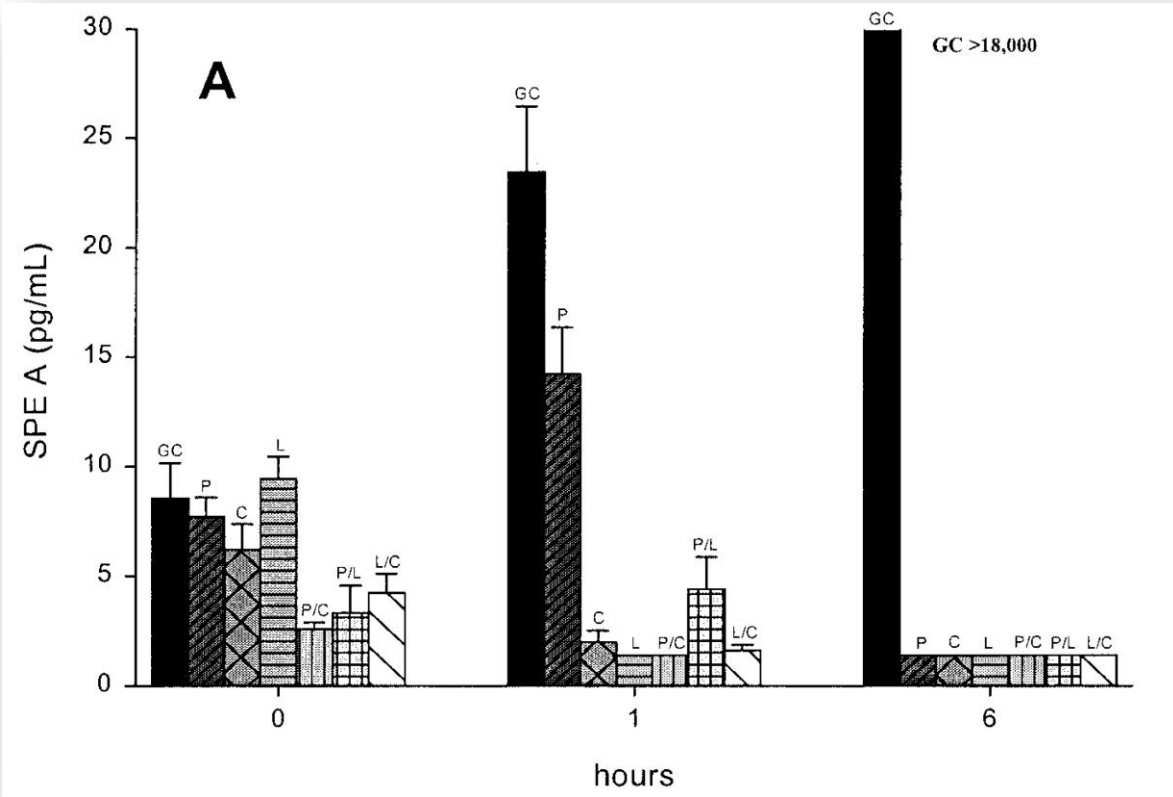
# Pour faire simple

- Tête et cou : amoxicilline + acide clavulanique
- Membres : amoxicilline + acide clavulanique
- Périnée/OGE : pipéracilline/tazobactam
- Pied diabétique/contexte particulier : penser au *Pseudomonas/Staph/ostéite/vascularisation*
- SARM : en fonction terrain/circonstances



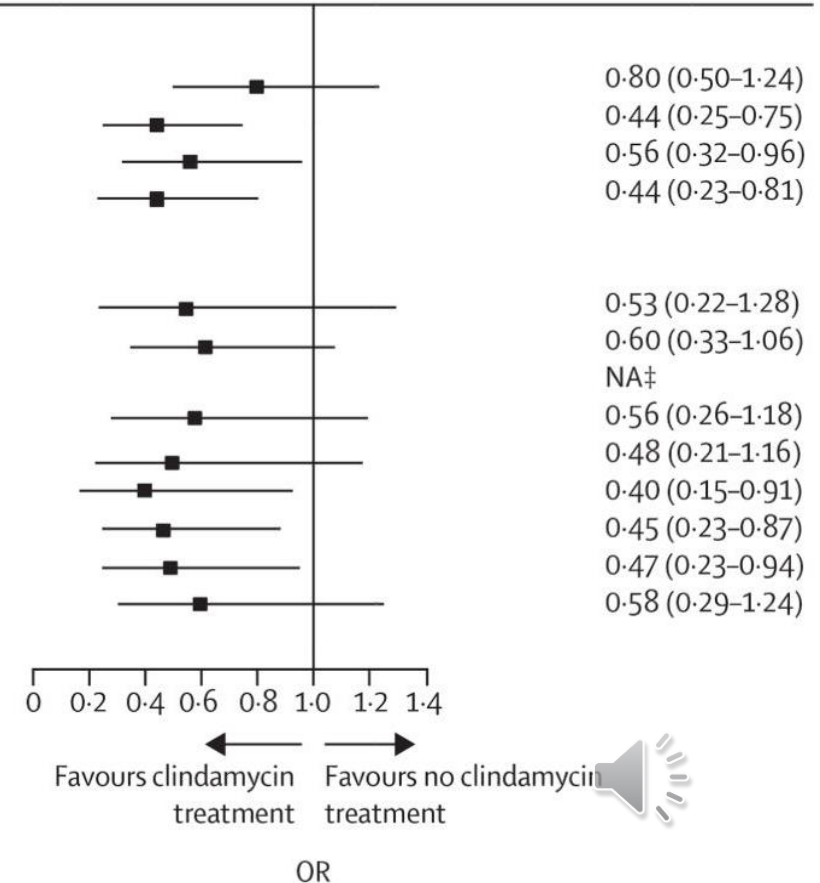


# Approche antitoxinique

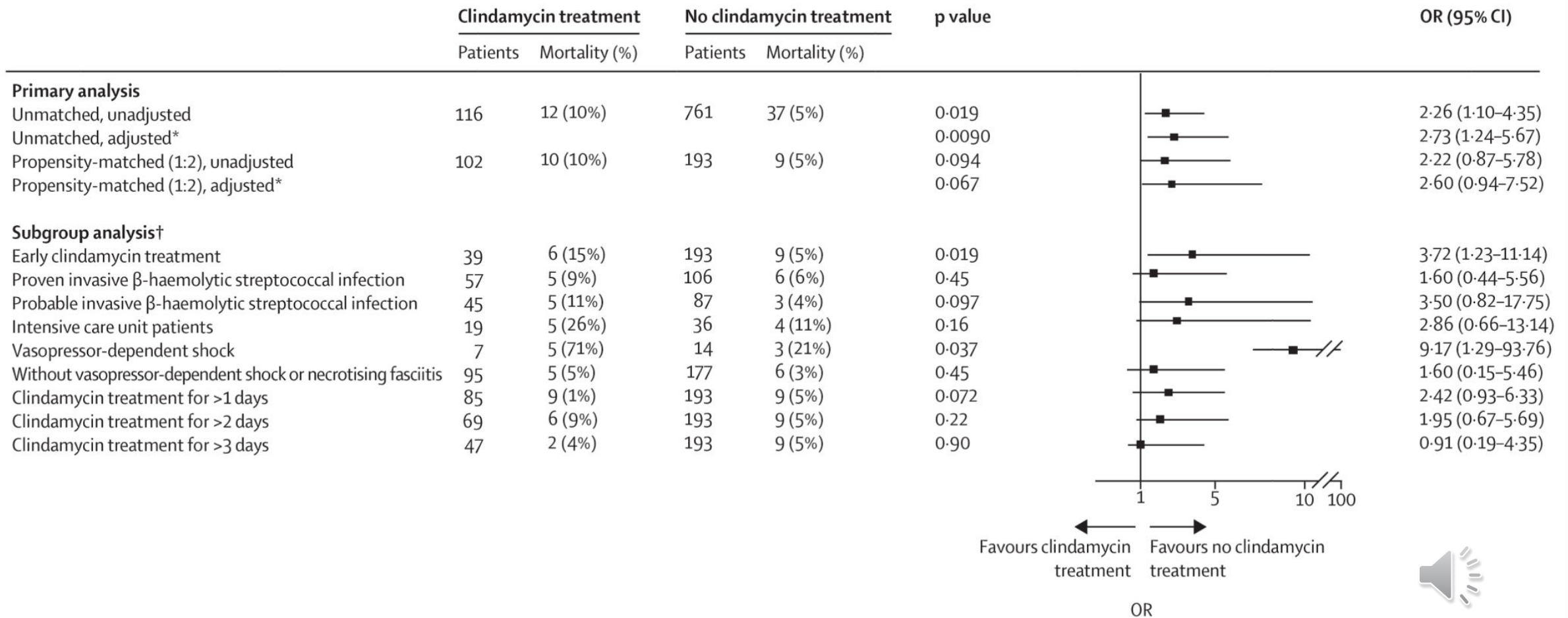


# Effet positif de la clinda dans les infections à SBA, y compris sans choc et sans nécrose

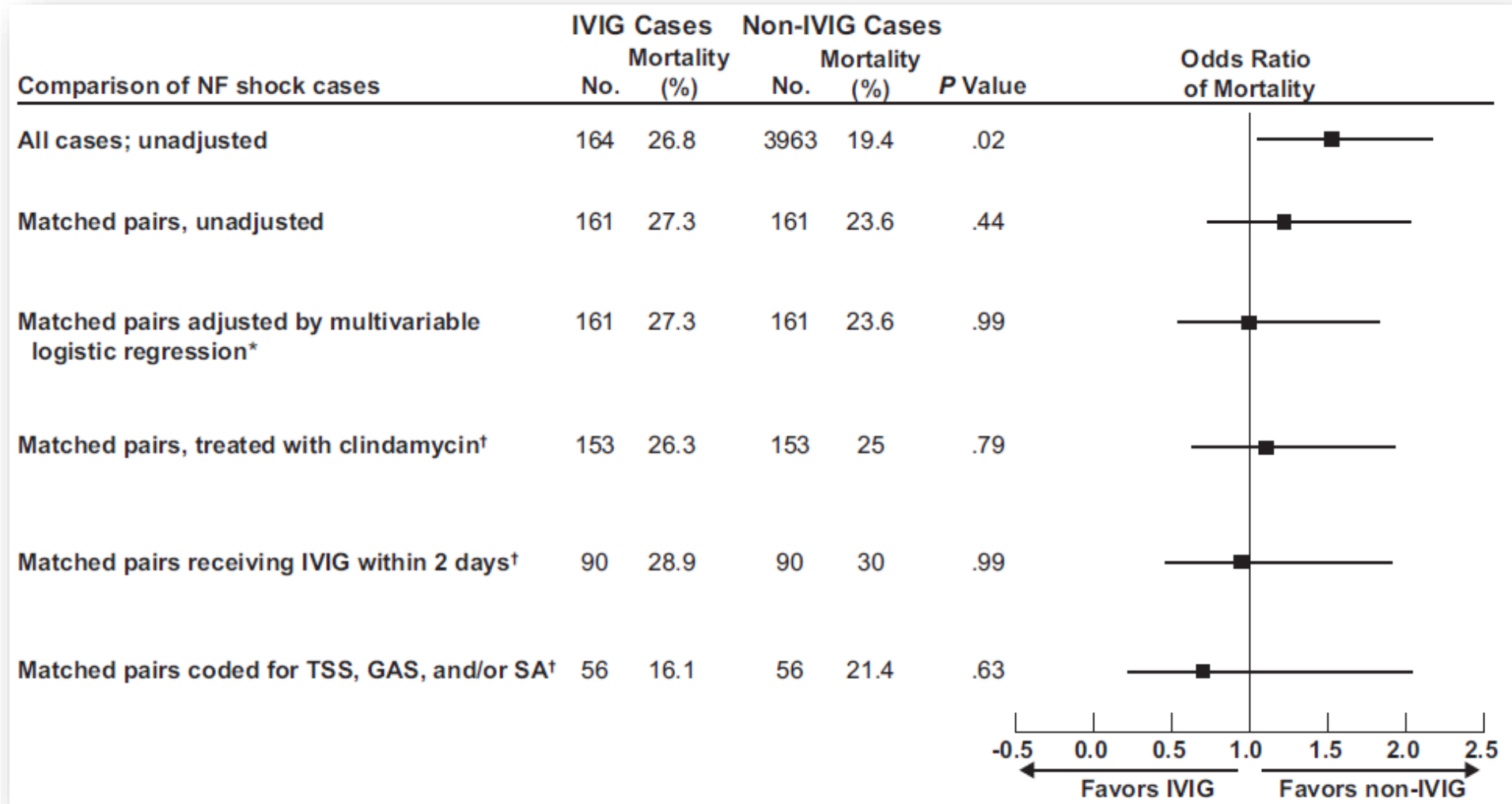
|   | Clindamycin treatment |               | No clindamycin treatment |               | p value | OR (95% CI)      |
|---|-----------------------|---------------|--------------------------|---------------|---------|------------------|
|   | Patients              | Mortality (%) | Patients                 | Mortality (%) |         |                  |
| <b>Primary analysis</b>                                       |                       |               |                          |               |         |                  |
| Unmatched, unadjusted   | 343                   | 28 (8.2%)     | 736                      | 74 (10.1%)    | 0.32    | 0.80 (0.50-1.24) |
| Unmatched, adjusted*  |                       |               |                          |               | 0.0031  | 0.44 (0.25-0.75) |
| Propensity-matched (1:2), unadjusted                          | 277                   | 18 (6.5%)     | 500                      | 55 (11.0%)    | 0.042   | 0.56 (0.32-0.96) |
| Propensity-matched (1:2), adjusted*                           |                       |               |                          |               | 0.011   | 0.44 (0.23-0.81) |
| <b>Subgroup analysis†</b>                                     |                       |               |                          |               |         |                  |
| Early clindamycin treatment                                   | 97                    | 6 (6.2%)      | 500                      | 55 (11.0%)    | 0.16    | 0.53 (0.22-1.28) |
| Proven invasive $\beta$ -haemolytic streptococcal infection   | 153                   | 18 (11.8%)    | 282                      | 51 (18.1%)    | 0.087   | 0.60 (0.33-1.06) |
| Probable invasive $\beta$ -haemolytic streptococcal infection | 124                   | 0             | 218                      | 4 (1.8%)      | 1.00    | NA‡              |
| Intensive care unit patients                                  | 55                    | 13 (23.6%)    | 90                       | 32 (35.6%)    | 0.13    | 0.56 (0.26-1.18) |
| Without vasopressor-dependent shock or necrotising fasciitis  | 37                    | 12 (32.4%)    | 57                       | 28 (49.1%)    | 0.11    | 0.48 (0.21-1.16) |
| Without vasopressor-dependent shock                           | 239                   | 6 (2.6%)      | 442                      | 27 (6.1%)     | 0.043   | 0.40 (0.15-0.91) |
| Clindamycin treatment for >1 days                             | 226                   | 12 (5.3%)     | 500                      | 55 (11.0%)    | 0.016   | 0.45 (0.23-0.87) |
| Clindamycin treatment for >2 days                             | 183                   | 10 (5.5%)     | 500                      | 55 (11.0%)    | 0.032   | 0.47 (0.23-0.94) |
| Clindamycin treatment for >3 days                             | 122                   | 9 (6.9%)      | 500                      | 55 (11.0%)    | 0.17    | 0.58 (0.29-1.24) |



# Résultats inverses dans les infections non à groupe A/B



# Les immunoglobulines polyvalentes n'ont pas d'impact sur la mortalité des fasciites nécrosantes sous vasopresseurs



# Les immunoglobulines polyvalentes n'améliorent pas le score fonctionnel à 6 mois dans les fasciites non sélectionnées

| Primary outcome   | IVIG group           | Placebo group        | Mean difference (95% CI) <sup>a</sup> | P value           |
|---|----------------------|----------------------|---------------------------------------|-------------------|
| PCS score adjusted for site of infection <sup>b</sup>                             | 36 (0 to 43)<br>[29] | 31 (0 to 47)<br>[28] | 1 (-7 to 10)                          | 0.81 <sup>c</sup> |
| Secondary outcomes  | IVIG group           | Placebo group        | Relative risk (95% CI)                | P value           |
| <b>Mortality</b>  |                      |                      |                                       |                   |
| Mortality, day 28   | 6/50 (12%)           | 6/50 (12%)           | 1.00 (0.35 to 2.89)                   | >0.99             |
| Mortality, day 90   | 9/50 (18%)           | 11/50 (22%)          | 0.82 (0.37 to 1.80)                   | 0.80              |
| Mortality, day 180 <sup>d</sup>   | 11/49 (22%)          | 14/50 (28%)          | 0.80 (0.40 to 1.59)                   | 0.65              |
| <b>Serious adverse reactions in the ICU</b>                                       |                      |                      |                                       |                   |
| All serious adverse reactions <sup>e</sup>  | 8/50 (16%)           | 11/50 (22%)          | 0.72 (0.32 to 1.65)                   | 0.61              |
| Acute kidney injury   | 6/45 (13%)           | 8/49 (16%)           | 0.82 (0.31 to 2.17)                   | 0.78              |
| Thrombi   | 2/50 (4%)            | 3/50 (6%)            | 0.67 (0.12 to 3.82)                   | >0.99             |
| <b>Use of life-support in the ICU</b>   |                      |                      |                                       |                   |
| Mechanical ventilation  | 49/50 (98%)          | 50/50 (100%)         | 0.98 (0.94 to 1.02)                   | >0.99             |
| Vasopressor/inotrope  | 46/50 (92%)          | 47/50 (94%)          | 0.98 (0.88 to 1.09)                   | >0.99             |
| Renal replacement therapy   | 11/50 (22%)          | 6/50 (12%)           | 1.83 (0.73 to 4.57)                   | 0.29              |
| <b>Bleeding and amputation</b>  |                      |                      |                                       |                   |
| Any bleeding in the ICU   | 5/50 (10%)           | 5/50 (10%)           | 1.00 (0.31 to 3.24)                   | >0.99             |
| Severe bleeding in the ICU  | 4/50 (8%)            | 2/50 (4%)            | 2.00 (0.38 to 10.43)                  | 0.68              |
| Amputation in the 180 days after randomisation                                    | 4/50 (8%)            | 6/50 (12%)           | 0.67 (0.20 to 2.22)                   | 0.74              |
| Secondary outcomes continued  | IVIG group           | Placebo group        | Mean difference (95% CI)              | P value           |
| SOFA score day 1 to 7 <sup>f</sup>  | NA                   | NA                   | 0.15 (-1.70 to 2.00)                  | 0.90 <sup>g</sup> |
| Blood products given in the ICU, ml   | 1529 (498 to 2559)   | 1712 (681 to 2742)   | -183 (-1641 to 1275)                  | 0.80              |
| Time to resolution of shock in the 28 days after randomisation, days <sup>h</sup> | 8.4 (6.1 to 10.8)    | 8.7 (6.4 to 11.1)    | NA                                    | 0.69              |
| Alive and off life-support in the 90 days after randomisation, days               | 70 (61 to 79)        | 67 (59 to 76)        | NA                                    | 0.41              |
| Alive and out of hospital in the 180 days after randomisation, days <sup>i</sup>  | 107 (90 to 124)      | 99 (82 to 117)       | NA                                    | 0.50              |

| Microbiological findings             |             |              |
|--------------------------------------|-------------|--------------|
| Polymicrobial infection <sup>i</sup> | 31/47 (66%) | 31/44 (70%)  |
| Group A streptococcus                | 4/31 (13%)  | 1/31 (3%)    |
| <i>S. aureus</i>                     | 5/31 (16%)  | 3/31 (10%)   |
| Other aerobic bacteria <sup>j</sup>  | 29/31 (94%) | 31/31 (100%) |
| Anaerobic bacteria <sup>k</sup>      | 18/31 (58%) | 20/31 (65%)  |
| Fungi                                | 4/31 (13%)  | 3/31 (10%)   |
| Monomicrobial infection <sup>i</sup> | 16/47 (34%) | 13/44 (30%)  |
| Group A streptococcus                | 9/16 (56%)  | 4/13 (31%)   |

Madsen MB et al. ICM. 2017



# Un intérêt dans les infections à Strepto A ?

**Table 3. Primary and secondary end points of a study assessing the efficacy of administration of high-dose intravenous polyspecific IgG.**

| End point  | All included patients   |                           | Patients with GAS only  |                           |
|--|-------------------------|---------------------------|-------------------------|---------------------------|
|  | IVIg group<br>(n = 10)  | Placebo group<br>(n = 11) | IVIg group<br>(n = 8)   | Placebo group<br>(n = 10) |
| Primary: mortality day 28, no. (%) of patients     | 1 (10)                  | 4 (36)                    | 1 (12.5)                | 3 (30)                    |
| Secondary  |                         |                           |                         |                           |
| Time to resolution of shock, <sup>a</sup> h        |                         |                           |                         |                           |
| Mean   | 88                      | 122                       | 100                     | 122                       |
| Median (range)                                     | 96 (2–159)              | 108 (47–294)              | 108 (2–159)             | 108 (47–294)              |
| Time to no further progression of NF/cellulitis, h |                         |                           |                         |                           |
| Mean   | 68 <sup>b</sup>         | 36 <sup>c</sup>           | 69 <sup>c</sup>         | 36 <sup>c</sup>           |
| Median (range)                                     | 20 (2–168) <sup>b</sup> | 24 (19–72) <sup>c</sup>   | 20 (2–168) <sup>c</sup> | 24 (19–72) <sup>c</sup>   |
| Mortality day 180, no. (%) of patients             | 2 (20)                  | 4 (36)                    | 1 (12.5)                | 3 (30)                    |



# Peu d'évidence pour l'OHB. Mais des séries de cas et des registres plutôt en faveur, malgré le surcoût

|   | HBOT ( <i>n</i> = 405) | Control ( <i>n</i> = 45,508) | <i>p</i> value |
|---|------------------------|------------------------------|----------------|
| Mean age, years (95 % CI)                 | 54.6 (53.2–56.1)       | 53.7 (53.6–53.9)             | 0.23           |
| Gender                                    |                        |                              | 0.03*          |
| Male                                      | 243 (60.0)             | 29,612 (65.1)                |                |
| Female                                    | 162 (40.0)             | 15,885 (34.9)                |                |
| Hospital bed size                         |                        |                              | 0.02*          |
| Small                                     | 33 (8.2)               | 5,359 (11.8)                 |                |
| Medium                                    | 124 (30.6)             | 11,818 (26.0)                |                |
| Large                                     | 248 (61.2)             | 28,219 (62.2)                |                |
| Location/teaching status of hospital      |                        |                              | <0.001*        |
| Rural                                     | 16 (4.0)               | 4,865 (10.7)                 |                |
| Urban non-teaching                        | 222 (54.8)             | 18,621 (41.0)                |                |
| Urban teaching                            | 167 (41.2)             | 21,910 (48.3)                |                |
| Deyo category [12]                        |                        |                              | 0.05*          |
| 0   | 144 (35.6)             | 18,925 (41.6)                |                |
| 1   | 129 (31.9)             | 12,808 (28.1)                |                |
| >1  | 132 (32.6)             | 13,775 (30.3)                |                |
| Admission type                            |                        |                              | <0.001*        |
| Emergency                                 | 162 (43.4)             | 23,705 (59.9)                |                |
| Urgent                                    | 111 (29.8)             | 9,316 (23.5)                 |                |
| Elective                                  | 92 (24.7)              | 6,344 (16.0)                 |                |
| Newborn                                   | 0                      | 81 (0.2)                     |                |
| Others                                    | ≤10 <sup>b</sup>       | 122 (0.3)                    |                |
| Admission source                          |                        |                              | <0.001*        |
| Emergency room                            | 147 (39.4)             | 21,976 (57.6)                |                |
| Another hospital                          | 47 (12.6)              | 3,411 (8.9)                  |                |
| Another facility including long-term care | 19 (5.1)               | 969 (2.5)                    |                |
| Court/law enforcement                     | 0                      | 36 (0.1)                     |                |
| Routine/birth/other <sup>a</sup>          | 160 (42.9)             | 11,750 (30.8)                |                |
| Site of NSTI                              |                        |                              |                |
| Truncal                                   | 19 (4.7)               | 1,491 (3.3)                  | 0.10           |
| Extremity                                 | 57 (14.1)              | 6,681 (14.7)                 | 0.73           |
| Mechanism of NSTI                         |                        |                              | 0.75           |
| Traumatic                                 | ≤10 <sup>b</sup>       | 1,018 (2.2)                  |                |
| Non-traumatic                             | 395 (97.5)             | 44,490 (97.8)                |                |
| Pathogen for NSTI                         |                        |                              | 0.005*         |
| Clostridial myonecrosis                   | 66 (16.3)              | 10,032 (22.0)                |                |
| Non-clostridial myonecrosis               | 339 (83.7)             | 35,476 (78.0)                |                |

|                 | OHB        | Pas d'OHB  |
|-----------------|------------|------------|
| Mortalité       | 4,5%       | 9,4%       |
| Durée de séjour | 14,3 jours | 10,7 jours |
| Coût            | 52 205 \$  | 45 464 \$  |



# La mortalité est-elle le bon critère de jugement ?



10/01



31/01



21/08/03

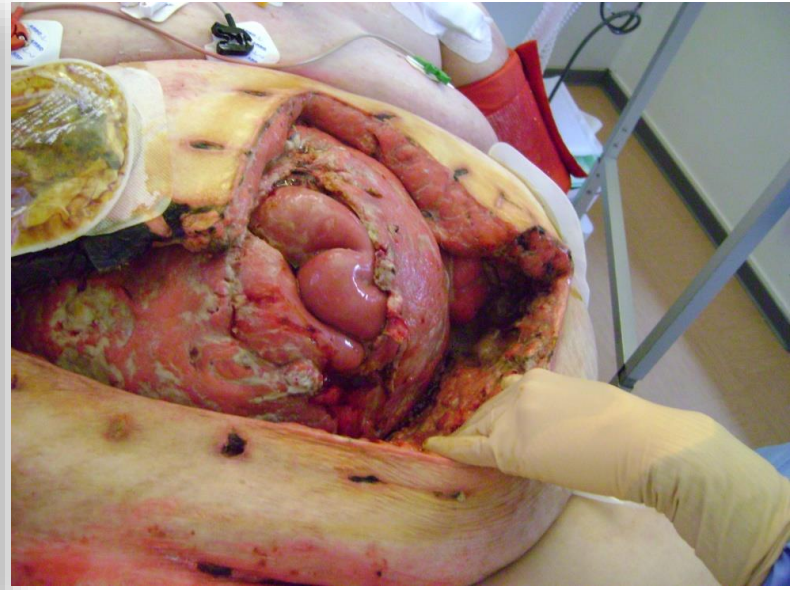


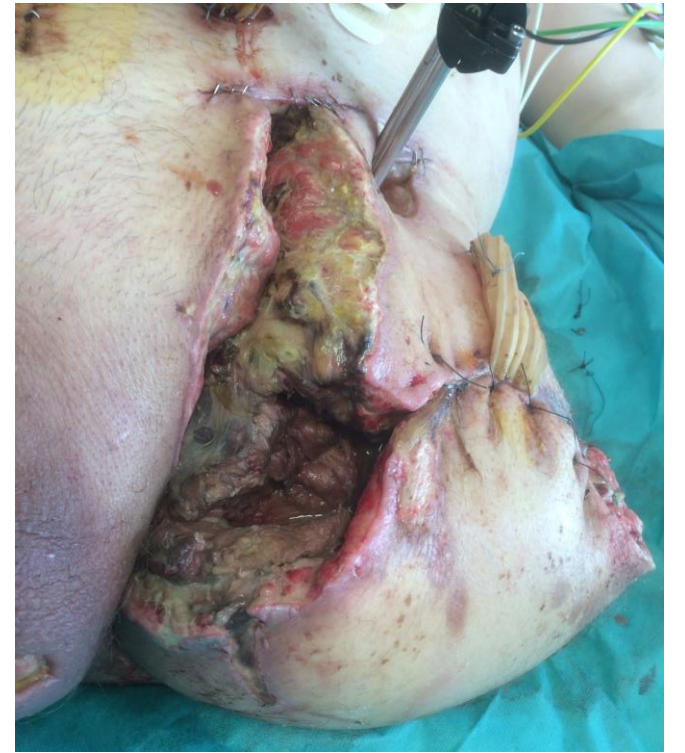
12/09/03



14/04/04









# Ne pas oublier



- Plaies à haut risque donc SAT-VAT si non à jour
- Interrogatoire/quick-test
- Rappel tous les 20 ans à partir de 20 ans

- Réanimation du sepsis
- Petite spécificité : remplissage massif



# Conclusion

- Poser l'indication chirurgicale à temps +++++++
  - Critères cliniques
  - Chirurgie conservatrice initialement
  - Répéter les nécrosectomies
- Antibiothérapie selon le site et le terrain
  - Considérer la vision staphylococcique méti-R américaine avec recul
  - Strepto B A/B : dalacine (antixotinique) (linezolide ?)
- Traitements adjuvants
  - Ig et Strepto
  - OHB ? :
    - Changer les paradigmes d'évaluation ?
    - Echelles composites de qualité de vie ? Chirurgie « conservatrice » ?

