3rd point: Staphylococcal vs streptococcus

Staphylococcus aureus	Streptococcus pyogenes
Coagulase (+) Catalase (+)	Coagulase (-) Catalase (-)
Clusters	Chains
Produces penicillinase (Resistant)	Sensitive to penicillin
Protein A as antiphagocytic (Cloaking) TSST-1 is the superantigen	Protein M as antiphagocytic (Cloaking) Streptococcal pyrogenic exotoxins is superantigen
Both are Gram positive cocci (violet) & Beta-hemolytic, some strains have capsule Non-motile, non-spore forming	

Streptococcal pathogenesis:

- Surface adhesion: Lipoteichoic acid & Fibronectin
- antiphagocytic: M protein, capsule (hyaluronic acid)
- Enzymes: Hyaluronidase (invade skin), StreptoDNAse and streptokinase
- Toxins destroy blood cells: Streptolysin O: Antigenic and Streptolysin S: Non antigenic.
- Streptococcal pyrogenic exotoxins (superantigen)
- Toxic shock syndrome (Erythrogenic toxin: Scarlet fever)
- Streptococcus pyogens The most common The most serious
- Facultative anaerobe
- Gram positive / spherical cocci / Arranged in chain / Non motile / Non spore forming

Direct skin infection:

Impetigo (epidermis)

- affects outer keratin layer of the
- honey -colored
- heal without scar
- It is contagious.
- Non-bullous: streptococcal causing
- Bullous: Staph. aureus

Ecthyma (epidermis / dermis)

- A deep form of impetigo that extends to dermis.
- heal by scar formation.
- More common in the buttocks, thigh, and legs

Erysepilas (dermis)

- restricted to dermis but with prominent lymphatic involvement
- More common in children and on lower extremities and butterfly area of the face
- Raised above the surrounding skin
- Clear line of demarcation between affected and non affected parts
- Lesions are brilliant, salmon red in color.

Cellulitis (dermis/hypodermis)

- extends to the subcutaneous hypodermis layer of the skin
- Diffuse without line of demarcation
- Lesions are more pink than salmon red.

Necrotizing fasciitis (hypodermis and muscle)

- spread rapidly through superficial and deep fascia
- Rapid spreading of redness area (≥ ½ inch per hour)
- draw a line around the red area with a pen, then watch for spreading beyond the line
- It may end in gangrene and tissue necrosis

Indirect skin affection by toxigenic strains:

Scarlet fever

- infection by strains capable of producing erythrogenic toxin
- high fever, sore throat and macular rash
- called Shultz-Charlton test in which intradermal injection of anti-erythrogenic toxin causes blanching of the erythematous areas

Toxic shock syndrome

- affect the skin in the form of necrotizing fasciitis, myositis or gangrene with toxic shock and
- multisystem organ failure

Propionibacterium acnes:

- Gram positive bacilli
- pleomorphic in shape (branched, Chinese letter arrangement)
- may be slightly curved so described as diphteroids (diphtheria)
- non motile and non spore forming
- Prefer the anaerobic growth condition (aerotolerant anaerobe)
- catalase positive
- Produce lipases and proteases
- They are considered as a part of normal skin flora
- Sensitive to tetracycline