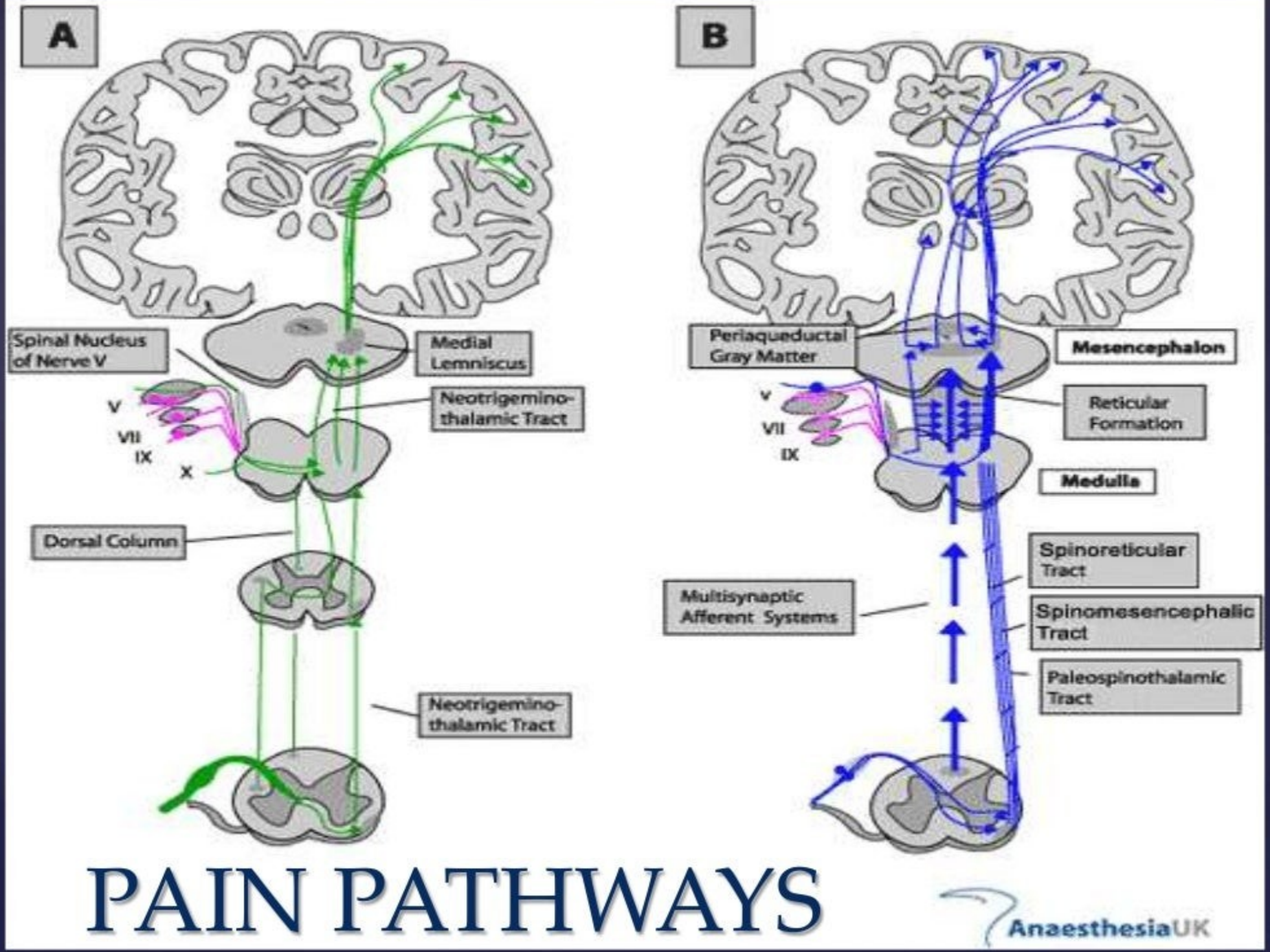
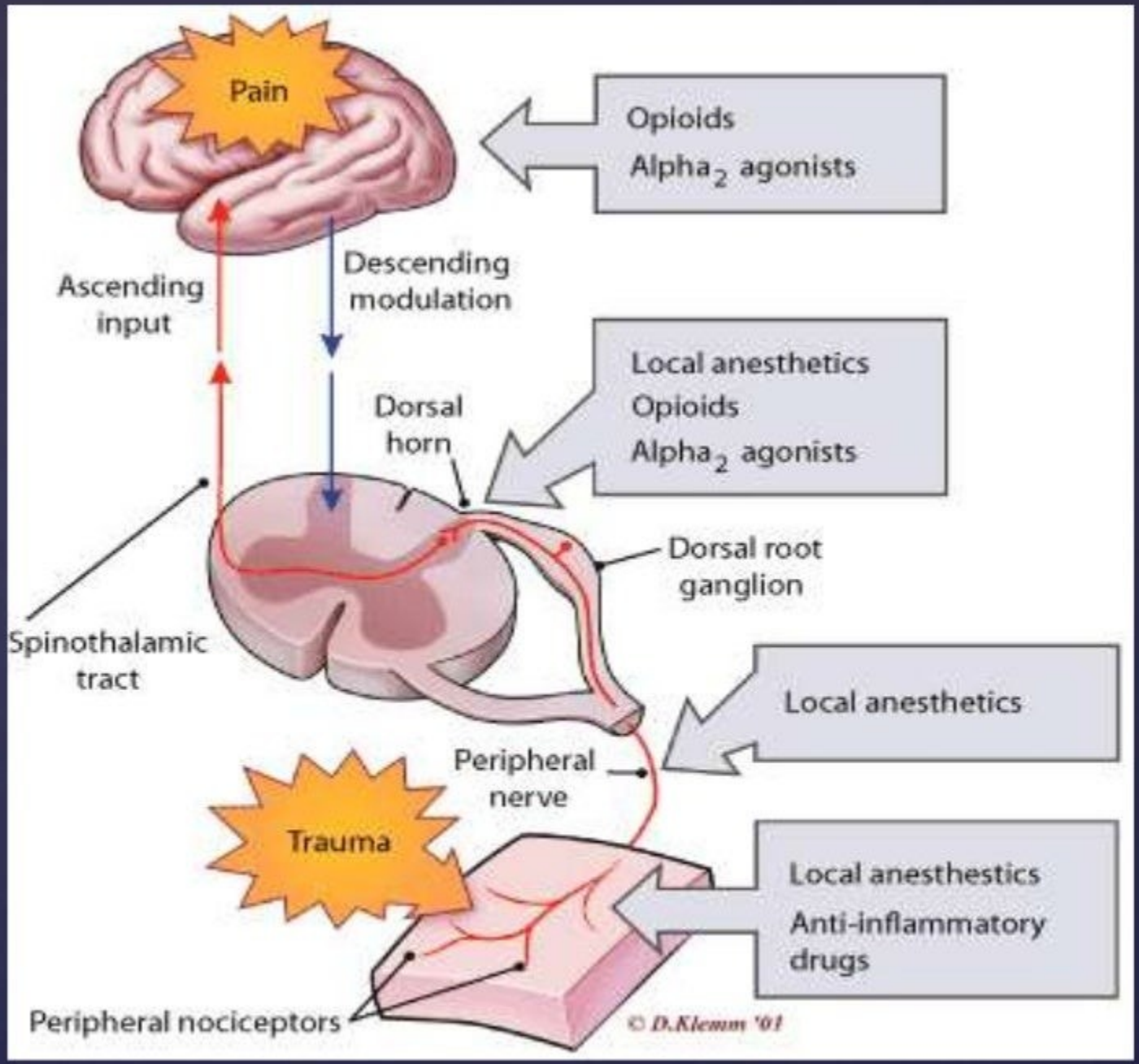
PREEMPTIVE ANALGESIA

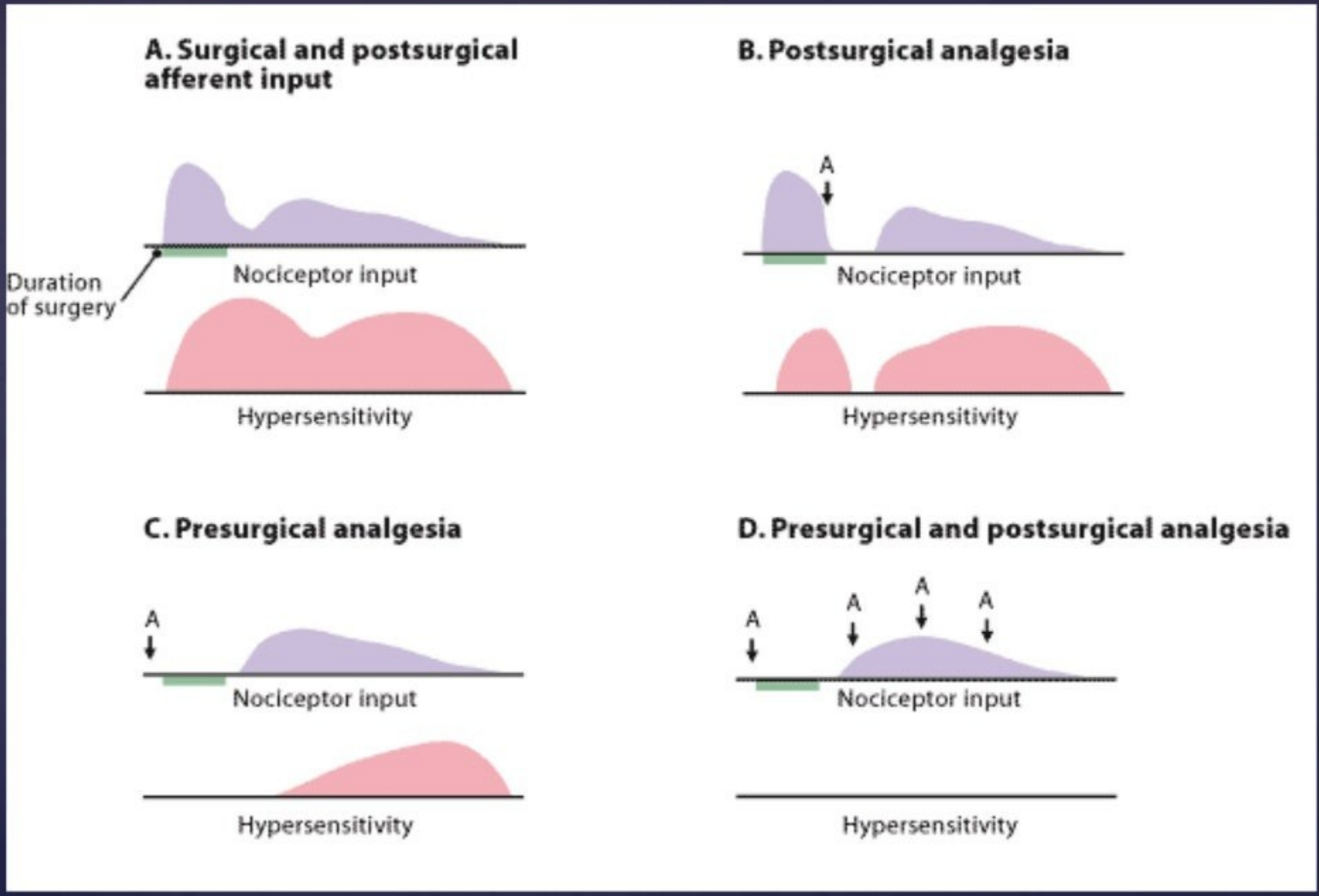
History

- PREEMPTIVE analgesia is an antinociceptive treatment that prevents establishment of altered processing of afferent input, which amplifies postoperative pain.
- The concept of preemptive analgesia was formulated by Crile
- Crile advocated the use of regional blocks in addition to general anesthesia to prevent intraoperative nociception and the formation of painful scars caused by changes in the central nervous system during surgery.
- The revival of this idea was associated with a series of animal studies started by Woolf.


A
Spinal Nucleus of Nerve V
Medial Lemniscus
Neotrigemino-thalamic Tract
V
VII
IX
X
Dorsal Column
Neotrigemino-thalamic Tract
B
Periaqueductal Gray Matter
Mesencephalon
Reticular Formation
V
VII
IX
Medulla
Spinoreticular Tract
Multisynaptic Afferent Systems
Spinomesencephalic Tract
Paleospinothalamic Tract
PAIN PATHWAYS
AnaesthesiaUK



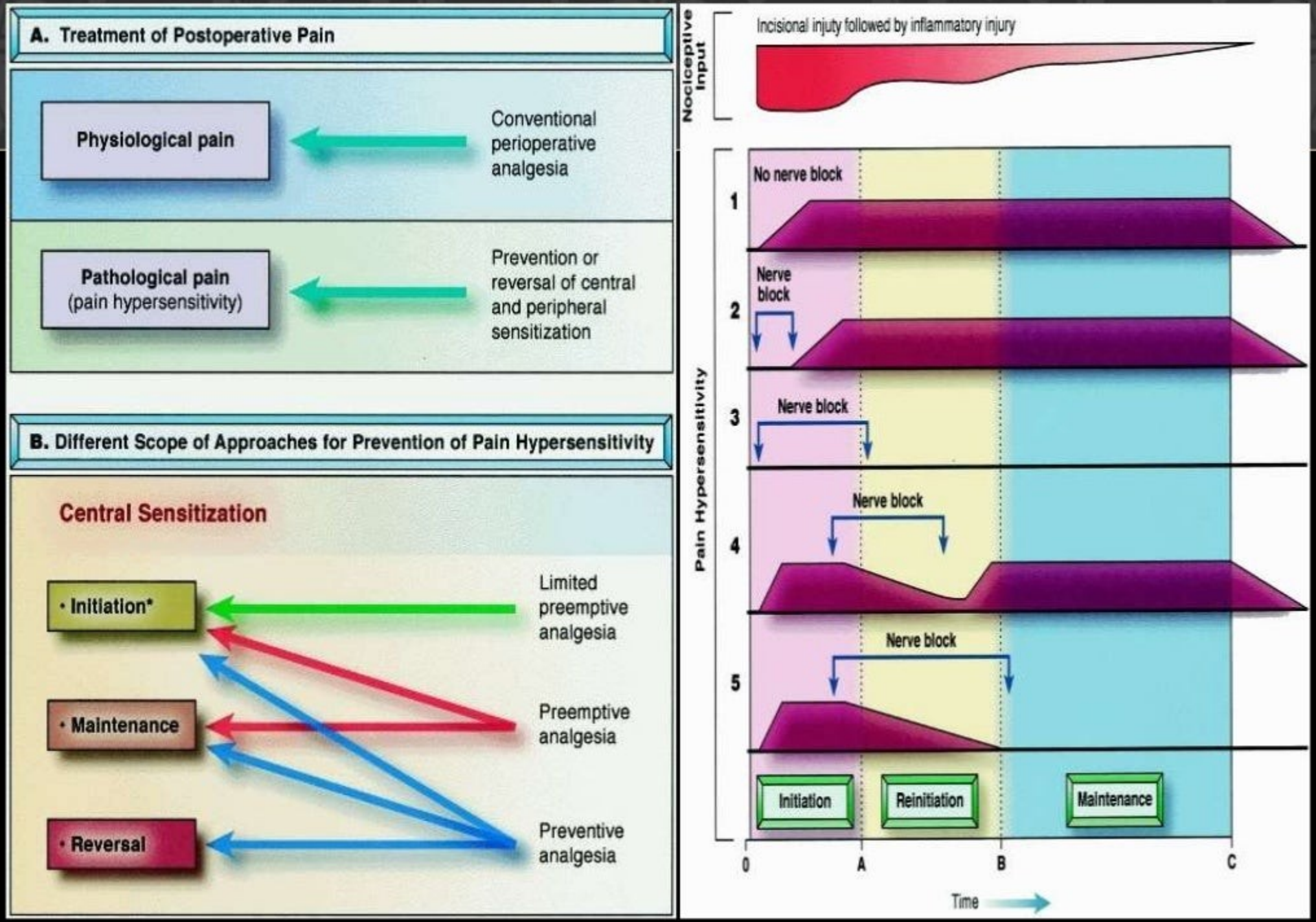
SITE OF ACTION OF ANALGESICS



CONCEPT OF ANALGESIA

Definitions of Preemptive Analgesia

- Three different definitions have been used as the basis for the recent clinical trials.
- Preemptive analgesia has been defined as treatment that:
  - starts before surgery;
  - prevents the establishment of central sensitization caused by incisional injury (covers only the period of surgery);
  - prevents the establishment of central sensitization caused by incisional and inflammatory injuries (covers the period of surgery and the initial postoperative period).


A. Treatment of Postoperative Pain
Physiological pain
Conventional perioperative analgesia
Pathological pain (pain hypersensitivity)
Prevention or reversal of central and peripheral sensitization
B. Different Scope of Approaches for Prevention of Pain Hypersensitivity
Central Sensitization
· Initiation*
· Maintenance
· Reversal
Limited preemptive analgesia
Preemptive analgesia
Preventive analgesia
Nociceptive Input
Incisional injuty followed by inflammatory injury
Pain Hypersensitivity
No nerve block
Nerve block
Nerve block
Nerve block
Nerve block
1
2
3
4
5
Initiation
Reinitiation
Maintenance
0
A
B
C
Time

CONCLUSION

- When preemptive analgesia was studied by comparing preincisional versus postincisional treatment groups, many authors found no difference in the pain outcome, while some reported statistically significant but clinically modest benefits with preincisional analgesia.
- It is clear that the above approach is too simple to overcome multiple problems posed by the complexities of central sensitization and the technical difficulties of clinical studies.
- However, some of the previous positive clinical studies in combination with basic science results are probably sufficient to indicate that preemptive analgesia is a valid phenomenon.

- The question is how to demonstrate the maximal clinical benefits that can be obtained with the use of preemptive treatment.
- Two conditions for clinical study are especially important:
  - providing effective suppression of the afferent input with sufficient duration of such treatment (that covers the initial postoperative period)
  - combined treatment approaches aimed at: preemptive treatment, maintenance of the obtained effect, and reversal of central sensitization (in the case of an incomplete preemptive effect).
- Preemptive analgesia continues to have promise for the effective treatment of postoperative pain.
- Evaluation of the true importance of preemptive analgesia will have to await further research with new, more comprehensive approaches.

THANK YOU