F wave

2 mV
2 msec
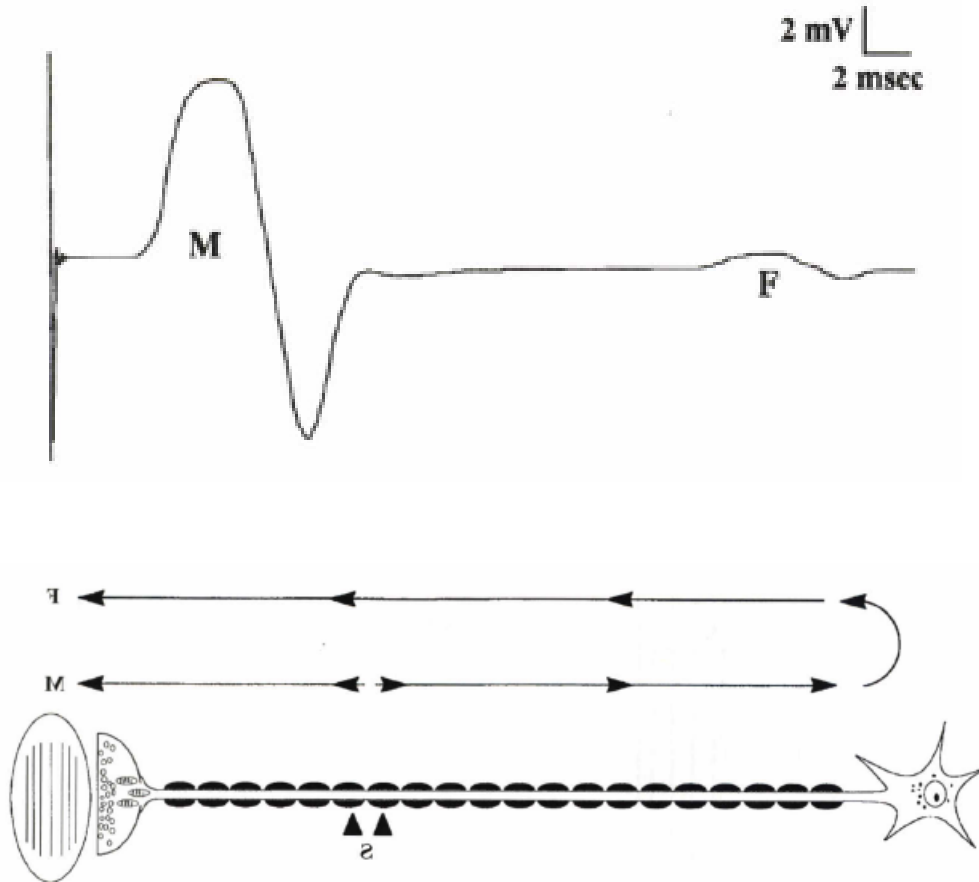
- Late motor response occurs after direct CMAP
- Not a true reflex
- Represent less than 10% of fibers
- Best seen with distal stimulation
- Minimum F latency commonly used

F waves

- Varies in latency, amplitude and configuration because each time different population is activated

- F wave persistence – Number of F waves obtained per number of stimulation

- F wave chronodispersion – difference between the minimal and maximal F response
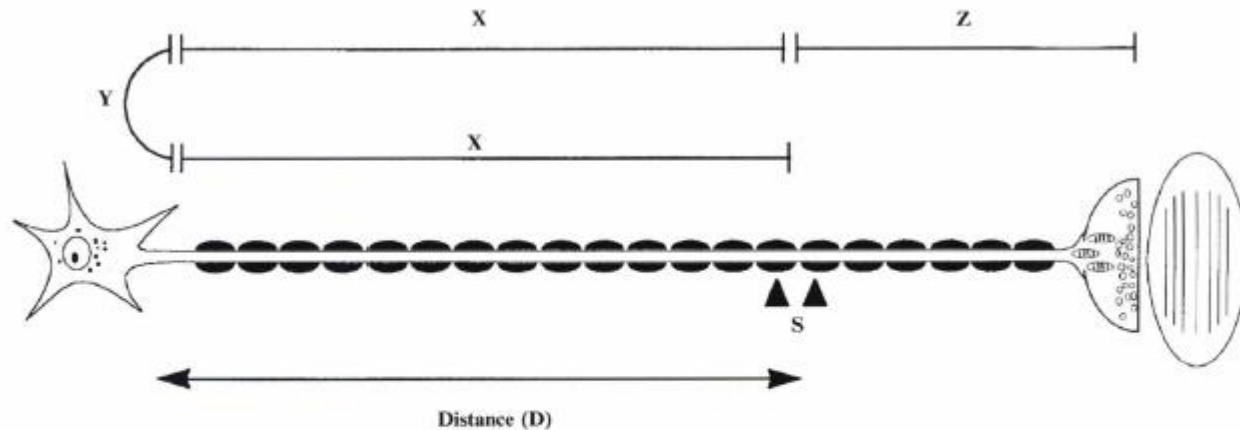
- F estimate

F wave
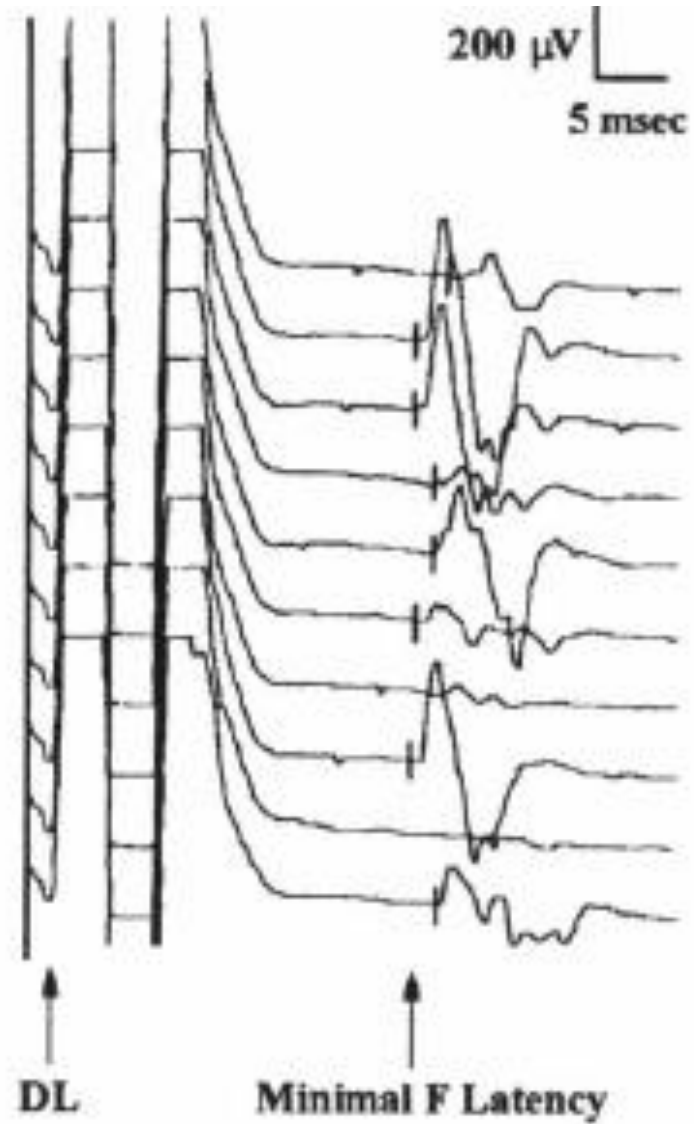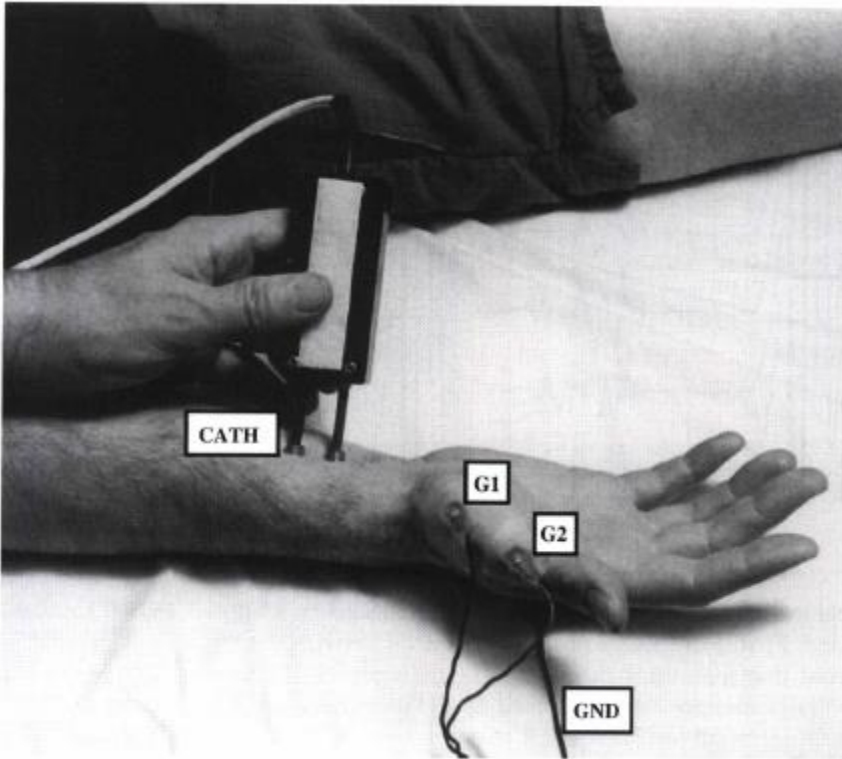
F wave estimate

FIGURE 4–7
F estimate calculation. X is the time from the stimulation site (S) to the spinal cord; Y is the turnaround time at the anterior horn cell; Z is the time from the stimulation site to the muscle. Theoretical F estimate = 2X + Y + Z. X can be calculated by measuring the distance between the stimulation site and the spinal cord (D), which then is divided by the conduction velocity of the nerve. Z is the distal latency. The turnaround time, Y, has been estimated experimentally as 1 ms. Thus, the F estimate = (2D/CV) × 10 + 1 ms + DL (a conversion factor of 10 is needed to obtain an answer in milliseconds).
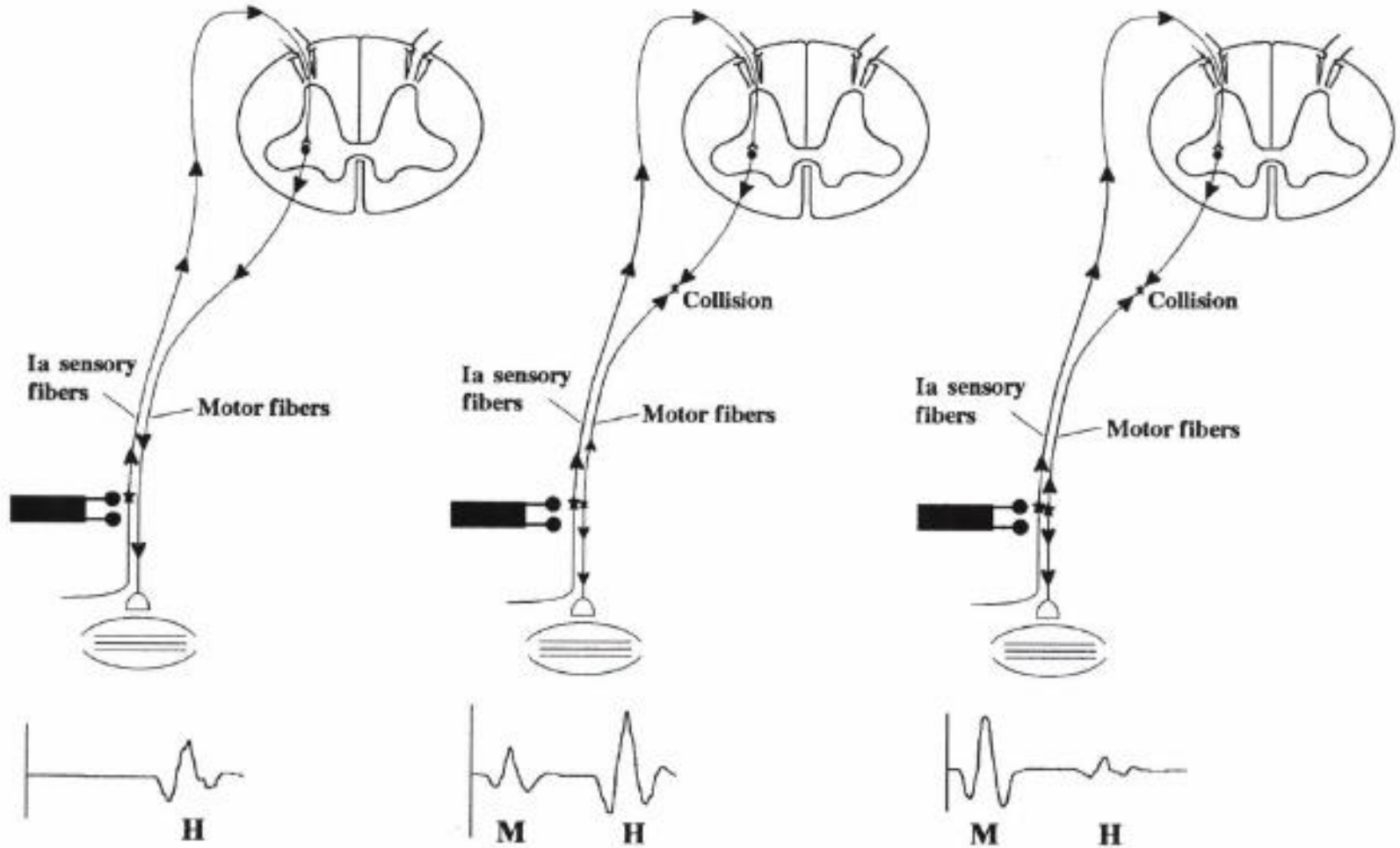
F waves limitaions

- Only C8-T1 in upper limb and L5-S1 in lower limb can be assessed
- Proximal lesions involving only sensory can't be assessed
- Delay in small segment of the nerve likely to be diluted out, as F latency includes the entire length of the nerve most of which is normal
- Abnormal only in severe proximal lesions
- Muscles supplied by multiple nerve roots do not show significant change if single nerve root is involved

H reflex

- Physiological reflex
- Ia muscle spindles afferent – alpha motor neuron efferent
- Tibial nerve - Gastroc–Soleus
- Submaximal long duration stimulus

H reflex

H reflex