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IMAGES IN ELECTROPHYSIOLOGY

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Inappropriate subcutaneous implantable cardioverter-defibrillator shock due to electromagnetic interference

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A 34-year-old male with prolonged QTc (Panel A, QTc: 560 ms, likely long QT syndrome subtype 2) felt a shock while using a drill [>12 inches (30 cm) away from S-implantable cardioverter-defibrillator]. Device interrogation revealed low amplitude QRS complexes marching through the noise which coincided with the use of drill suggesting electromagnetic interference (EMI) (Panel B).

Low amplitude of QRS complexes may have contributed to the inability to filter out the external noise. Smart pass filter (9 Hz high-pass filter, enabled) reduces amplitude of low frequency signals (T waves) but is not useful for high frequency signals like EMI. The EMI (notch) filter (non-programmable) of the device was set at 60 Hz. The band pass filter (3–40 Hz, wide-range filter, non-programmable) was also enabled. The patient has not used the drill since then and is doing well.

