Risks of accidently intramuscular injections of insulin

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Subcutaneous or intramuscular injections of insulin in children.
Are we injecting where we think we are?

18 of 59 injections (30.5%) (one injection for each child) were in the intramuscular tissue

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Additional Findings

Standard for injection technique. Aim: for persons with diabetes receiving insulin. Treatment to be given the correct injection of insulin. Additional studies have shown that insulin positioned intramuscularly, increases absorption rates, with a risk of hypoglycaemia and fluctuating day-to-day uptake.

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Symptoms of hypoglycemia include rapid heartbeat, hunger, confusion, fatigue, cold sweats, shakiness and headache. Severe hypoglycaemia that is not treated quickly can lead to unconsciousness and even death in extreme untreated cases.

Source: wrongdiagnosis.com / about Hypoglycemia / 24.07.2011

If you inject too deep, the insulin could go into muscle, where it’s absorbed faster but might not last so long (and, it hurts more when you inject into muscle).

Source: db.com / Improving Your Insulin Injection Technique: DB Diabetes USA

When the blood sugar levels drop fast, the cells can absorb all available glucose and leave none for the brain, resulting in brain cell starvation and then to coma. Shaking, convulsions, profuse sweating and intense hunger characterize insulin shock and should be watched out for.

Source: reactivehypoglycemia.net / hypoglycemia-symptoms

Severe hypoglycemia that is not treated quickly can lead to unconsciousness and even death in extreme untreated cases.

Source: wrongdiagnosis.com / about Hypoglycemia/
How Needle-Free Penetrates the Skin

Needle Syringe

Needle-Free Injection

Risk of intramuscular Injection

Pool of Medication Left by needle

The injected fluid (0.2ml) followed the fascia but did not enter the underlying muscle itself

Medication is dispensed uniformly in spray like pattern

INJEX Patient Acceptance

Results of patient evaluations, of the Injex™, based on the German school grading system, which starts at 1 (excellent) and ends at 6 (unsatisfactory).
INJEX Histology

Investigation of depth of penetration and histologic dispersion of a dye injected with the INJEX-System
(MeMiniportmbH/Rösch AG)

Results:
Depth of penetration: 3.2 – 9.1mm
Pattern of spread of dye: conical, 5 – 18mm diameter
Compartment: subcutis

Additional Findings:
Depth of penetration depends on the volume administered
Intact epidermis without damage of underlying tissue
Dye did not penetrate beyond the fascia into the skeletal muscle

The injected fluid (0.2ml) followed the fascia but did not enter the underlying muscle itself.
Investigation of depth of penetration and histologic dispersion of a dye injected with the INJEX-System

(Mediport GmbH/Rösch AG)
Investigation of depth of penetration and histologic dispersion of FTIC
(Mediport GmbH/Rösch AG)

Magnification: x 10
Distance from injection site: 10 µm
Injected volume: 50 µl

Subcutis
Clinical Study

Insulin – Fast Acting Types - Pharmacokinetics of Fast Acting Insulin when injected with the Injex needle-free injector versus a syringe and needle.

Injex Blood Glucose Kinetics

Comparison of Blood Glucose and Insulin Kinetics following Injex-and Pen Injection

(Schatz,H., Pfohl,M. et al., Ruhr-Univ. Bochum) 36th Annual Conference of the German Diabetes Society (DDG), Aachen,26.05.2001

Injex Blood Glucose Kinetics

Comparison with conventional pen; needle-free Injex controls blood sugar the same, lower pain level, and causes less skin irritation.

Ehren, M., Lieder, O., Engelbert, S., Schatz, H., Pfohl, M., Medical University Clinic Bergmannsheil, Bochum, Germany, 2001.

Results demonstrate no loss in insulin potency after injection by either the Injex 30 or the syringe.