

## TECHNICAL FIELD

Medical Device: Injection Device (2002-0125)

## BACKGROUND

Conventional devices for injecting medications into the muscles and tissues of a patient are typically some form of manual hypodermic syringe system. Large diameter needles cause pain and discomfort, while excessively high injection rates can tear away tissue and cause excessive build-up of fluid pressure around muscle and other structures. Receiving an injection by such a conventional device can be a very traumatic experience for many patients, particularly a child. These fears are primarily caused by pain associated with hypodermic syringe injections.

The child's fear, and that of his/her parents, becomes a significant medical problem if it leads to a child not receiving required immunizations or other therapeutic medications. In addition, once a patient experiences these discomforts, the sight of a hypodermic needle alone often triggers tension, anxiety and rejections, increasing the difficulty for the delivery of needed medications and immunizations and, in some cases, threatening the safety of those involved. Recent attempts to address this problem by administering either a topical or injected anesthetic have not always resolved these issues. These approaches may not always be desirable for a patient and may add unnecessary expense to the total procedure.



## TECHNOLOGY

The present invention by Dr. Eric Wall provides an essentially painless method and an apparatus for intramuscular injection of medications into a patient. Specifically, this technology utilizes a device that houses a quantity of medication and a fine gauge hypodermic needle out of sight of the patient. The device is attached to the patient and when activated, delivers the medication at a rate of injection effective for absorption into the tissue without causing pain.

Preliminary tests using fine gauge needles and slow injection rates in human subjects markedly reduced the discomfort associated with the procedure and, in most cases; no discomfort or pain was reported. Some subjects were actually unaware that an injection had been administered. A formal study in pediatric patients is being initiated and a working prototype is being pursued.

## APPLICATIONS

1. Injection device ideally used on pediatric patients to give immunizations
2. Injection device used more broadly for any painless injection scenario

## ADVANTAGES

- No pain
- Hidden fine gauge needles and medication
- Increase parent and patient satisfaction
- Complete delivery of vaccine or medication
- Increase safety and compliance
- Potential to lower health care costs associated with delivery difficulties

## INVESTIGATORS

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Division of Orthopedic Surgery  
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## STATUS

Patent applications pending.

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# Painless Injection Device

## THE INVENTOR

Eric J. Wall, MD

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## BACKGROUND

**MD:** University of California, San Diego, CA, 1986.

Internship: University of California, San Diego, CA, 1986-1987.

**Residency:** Orthopaedic Surgery, University of California, San Diego, CA, 1987-1992.

**Fellowship:** Biomechanics/Spine Research, University of California, San Diego, CA, 1988-89;

Pediatric Orthopaedic Fellowship, Los Angeles Children's Hospital, Los Angeles, CA, 1992-1993.

**Certification:** American Board of Orthopaedic Surgery, July 1995.



Dr. Eric J. Wall has performed endoscopic pelvic osteotomies on 23 patients with hip disorders. This novel technique was developed at Cincinnati Children's Hospital Medical Center in conjunction with Ethicon Endosurgery.

Results have been presented at the American Academy of Orthopaedic Surgeons annual meeting and the Pediatric Orthopaedic Society of North America annual meeting. This technique holds great promise for decreasing the surgical morbidity of open pelvic osteotomy, which is one of the most invasive of all orthopaedic surgeries.

Special Interests: Endoscopic scoliosis and pelvic osteotomy; sports growth plate arrest overuse syndromes, pediatric orthopaedic biomechanics, scoliosis correction spinal hemiepiphysiodesis, patent spinal correction system (patent pending); identifying female athletes at high risk for anterior cruciate ligament (ACL) injury