Bead Implantation for Acupuncture

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Implantation of materials into acupuncture points has been used for many years, at least since 1989, with other forms of implantation for over 40 years. The procedure used here is based on permanent stimulation of acupuncture points by gold wire or other materials.

The anti-inflammatory mechanisms of monovalent gold salts and metallic gold, is not completely understood. One proposed mechanism of action for Au is due to binding with thiolate and thioether ligands on proteins which inhibits presentation of complexed antigen to T cells. It is widely accepted that gold has anti-inflammatory effects, causing hypersensitivity and tissue inflammation. In vivo and in vitro studies have shown that metallic gold implants release gold ions in tissues and cell cultures as a result of interaction with oxidative agents most likely provided by macrophages.

Other precious and semiprecious metals are used in dentistry including gold, palladium, and silver and orthopedic implants with titanium. Nonprecious metals such as nickel, chromium, cobalt, and molybdenum are commonly included in alloys to increase resistance to corrosion, wear, and tear and to improve mechanical properties. Experiments in rats have shown that histologic changes around metal implants generally include edema, connective tissue proliferation, hyalinization, capillary proliferation, epithelial proliferation, plasma cell infiltration, lymphocyte infiltration, and giant cell infiltration. At low levels, it is thought that these can lead to chronic stimulation of acupuncture points until the metal is eventually walled off by the body, then it remains innert. In general, nonprecious alloys produce severe tissue reactions whereas precious metals produce mild reactions.

T lymphocytes and B lymphocytes were both prominent in the inflammatory infiltrates in the dogs. The eosinophilic material found in the surrounding capsule closest to the implants most likely represents fibrous tissue. The initial host response to metal implants is formation of surrounding granulation tissue, which usually matures into a capsule that is largely collagenous but may resemble fibrocartilage if the implant is in relative motion and is in contact with bone or articular tissue. Collagenous capsules around gold implants have been described in humans and dogs. The encapsulation of the gold beads by a paucicellular and poorly vascularized fibrous capsule probably helps impede the inflammatory reaction by isolating the metal implant from the surrounding tissue.

All dogs receiving 24-karat gold developed a local inflammatory reaction around the implants. Findings from human studies suggest that inflammatory reactions to gold implants occur in a limited number of patients; yet, these human studies could be biased by the primary availability of specimens from cases where the implants had to be removed owing to complications. In rats, the tissue reaction to gold has been reported to be not significantly different from that seen in controls.

The mechanism behind the clinically observed pain-relieving effect of multiple periarticular gold beads is unclear. Both the direct impinging of the beads on the surrounding nerves, muscle, and fibrous tissue and the induced inflammation might mediate release of soluble factors that modulate the dogs' perception of pain. The role of inflammation in the pain-relieving effect of gold implants warrants further investigation. The findings of the present study suggest that this role could be addressed in studies based on implant material known to cause more inflammation than that of 24-karat gold.

Although inflammation was evident around the implants, the severity of the lesions was minor compared with the hip joint osteoarthritis present in all treated dogs. The lesions surrounding the implants must therefore be considered of secondary importance to the overall pathology of the hip region. The current general understanding of the biocompatibility of metal implants still advocates that gold of high purity should be the preferred material in procedures such as those used in this experiment.

It has been suggested that acupuncture with needles or by implanting various materials close to the hip joint can treat the chronic pain resulting from osteoarthritis induced by hip dysplasia. Case reports from the USA and Europe claim that implants of gold beads near the hip

joint are effective in treating pain and locomotor difficulties in dogs with hip dysplasia. Moreover, the method is said to be inexpensive, quick and easy to perform, and to involve no postoperative pain, exercise restriction or discomfort for the animal. The reports claim success rates of between 80 per cent for dogs seven to 12 years old and 99 per cent for younger dogs, with good or complete improvement in locomotion and reductions in signs of pain. However, in a study of such a controversial treatment, the authors considered that controlled blinded methods should be applied.

Materials:

3 ml syringe, ½ inch 27 gauge needle, 1.5 inch 20 gauge spinal needle, 1 inch 19 or 20 gauge gauge needle, 99.99% pure gold wire (e.g. from SurePure Chemetals, Inc. 973-377-4081).

Method:

1- Withdraw 2.0 ml of anesthetic solution into the 3 ml syringe.
2- In either a conscious, calm animal or an anesthetized animal, localize the appropriate acupuncture point to be implanted.
3- Insert the 27 gauge needle into the point. After the 27 gauge needle has been safely and accurately inserted, attach the 3 ml syringe.
4- Inject an appropriate amount of local anesthetic into the acupuncture point with the 3 ml syringe (e.g. 1-1.5 ml in medium to large dog).
5- Detach the syringe and leave the 27 gauge needle inserted into the acupuncture point.
6- Cut an appropriate size 24-26 gauge gold (or titanium) wire piece for the acupuncture point, species and size of animal to be implanted (e.g. 1/8 to ¼ inch for distal points in a medium size dog). These can be pre-cut and sterilized.
7- Replace the 27 gauge needle with the 20 gauge spinal needle.
8- Load the gold wire into the spinal needle and insertion the cannula to push the wire out of the tip. You may want to hold the spinal needle and pull onto the stylet to dislodge the gold wire into the acupuncture point.
9- Withdraw the spinal needle and hold firm pressure on the punctured tissue for 1-3 minutes.
10- Repeat at other acupuncture points as necessary.

For those who do not want to cause interference with MRI imaging or with modern imaging there are some choices which provide the same benefits as "gold" bead implants. One is to use other precious metals which lead to similar effects as gold implants, but do not interfere with MRI imaging (if good medical grade material). These are still inert to the body, but can only be seen via radiography and ultrasound. On MRI, they are dark, but do not create a magnetic void. Titanium wire in 24 ga is available on line https://www.amazon.com/Titanium-Grade-99-5-GalliumSource-LLC/dp/B00D62AHWU and this can be used by the above method. I prefer to give dog Domitor 5-15 mcg/kg and then can place all the beads and reverse the sedation when done, since most of these materials are placed at anatomic sites.

Another alternative to metallic implants is to use PLA (polylactic acid) beads which can be made into wire and then injected with a modified syringe (16 ga) with a plunger. These can be gas autoclaved for implantation. The patient is given chemical restraint (Domitor) and the skin prepared with Purell hand sanitizer. Implants are then placed into the AP points of desire. The PLA material might be visible on ultrasound, but otherwise it is invisible to most imaging modalities.

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