

MEDICINE AND SURGERY

July 22, 2022 | Webinar

Received date: 27-05-2022 | Accepted date: 15-06-2022 | Published date: 29-07-2022

Anorectal transplantation: the first long-term success in a canine model

Jun Araki

Shizuoka Cancer Center Hospital, Japan

Objective: Anorectal transplantation is a challenging procedure but a promising option for patients with weakened or completely absent anorectal function. We constructed a canine model of anorectal transplantation, evaluated the long-term outcomes, and controlled rejection and infection in allotransplantation.

Methods: In the pudendal nerve function study, six dogs were randomly divided into two groups: transection and anastomosis, and were compared with a control using anorectal manometry, electromyography, and histological examination. In the anorectal transplantation model, four dogs were assigned to four groups: autotransplant, allotransplant with immunosuppression, allotransplant without immunosuppression, and normal control. Long-term function was evaluated by defecography, videography, and histological examination.

Results: In the pudendal nerve function study, anorectal manometry indicated that the anastomosis group recovered partial function 6 months postoperatively. Microscopically, the pudendal nerve and the sphincter muscle regenerated in the anastomosis group. Anorectal transplantation was technically successful with a three-stage operation: colostomy preparation, anorectal transplantation, and stoma closure. The dog who underwent allotransplantation and immunosuppression had two episodes of mild rejection, which were reversed with methylprednisolone and tacrolimus. The dog who underwent allotransplantation without immunosuppression had a severe acute rejection that resulted in graft necrosis. Successful dogs had full defecation control at the end of the study.

Conclusions: We describe the critical role of the pudendal nerve in anorectal function and the first long-term success with anorectal transplantation in a canine model. This report is a proof-of-concept study for anorectal transplantation as a treatment for patients with an ostomy because of anorectal dysfunction.

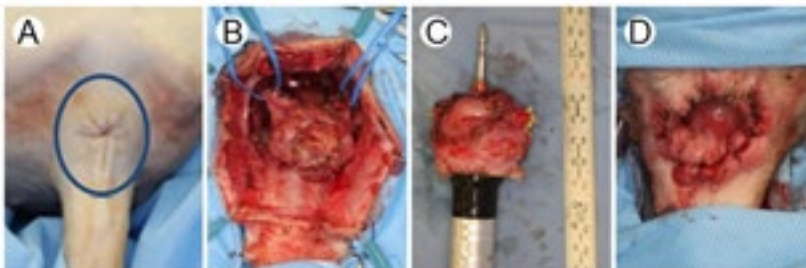


Figure: Anorectal transplantation in a canine model. (A) Circumanal skin incision. (B) The pudendal arteries, veins, and nerves are identified. (C) Anorectal graft. (D) Wound closure.

Recent Publications:

1. Araki J, et al. (2022) Anorectal Transplantation: The First Long-term Success in a Canine Model. *Ann Surg.* 275: e636-e644.
2. Galvão FH, et al. (2016) Allogeneic anorectal transplantation in rats: technical considerations and preliminary results. *Sci Rep.* 6: 30894.

5th International Conference on
MEDICINE AND SURGERY

July 22, 2022 | Webinar

3. Seid VE, et al. (2015) Functional outcome of autologous anorectal transplantation in an experimental model. Br J Surg. 102: 558-62.
4. Araki J, et al. (2015) Normothermic preservation of the rat hind limb with artificial oxygen-carrying hemoglobin vesicles. Transplantation. 99: 687-92
5. Araki J, et al. (2014) Anorectal autotransplantation in a canine model: the first successful report in the short term with the non-laparotomy approach. Sci Rep. 4: 6312.
6. Araki J, et al. (2013) Anorectal transplantation in human cadavers: mock anorectal allotransplantation. PLoS One. 8: e68977.

Biography

Jun Araki has his expertise in evaluation and passion in developing surgical innovation. His open and contextual evaluation model based on responsive constructivists creates new operative techniques. He has built this model after years of experience in research, evaluation, teaching, and administration both in hospital and education institutions. The foundation is based on Supermicrosurgery, which allows anastomoses of nerves and blood vessels less than 0.5 mm.

ja980079@yahoo.co.jp