Canine Neutering Techniques in the Male Dog

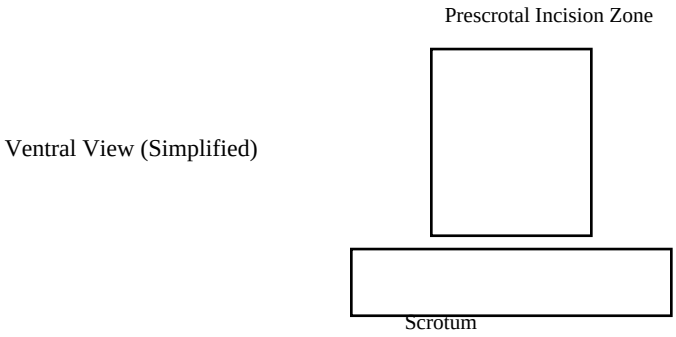
Prescrotal Orchiectomy vs Scrotal Approaches and Scrotal Ablation
A Clinician-Level Comparative Review

Introduction

Castration of the male dog is among the most frequently performed surgical procedures in small animal practice. While prescrotal orchiectomy has historically been the dominant approach, alternative scrotal techniques and adjunctive scrotal ablation are increasingly considered in specific clinical contexts. This document provides a detailed, clinician-oriented comparison of prescrotal orchiectomy, scrotal incision orchiectomy, and orchiectomy combined with scrotal ablation, with emphasis on surgical anatomy, technique selection, complications, and evidence-based outcomes.

Relevant Surgical Anatomy

Key anatomical structures relevant to all neutering approaches include the testes, spermatic cord (testicular artery and vein, pampiniform plexus, ductus deferens), vaginal tunics, scrotal dartos muscle, and surrounding subcutaneous tissues. The urethra lies ventral and caudal to the prescrotal incision site and is at risk during deep dissection or abnormal anatomy. Scrotal skin is thin, elastic, and highly vascular, contributing to rapid healing but also predisposition to edema and bruising.



Prescrotal Orchiectomy

Prescrotal orchiectomy involves a single midline incision made cranial to the scrotum. Each testis is exteriorized sequentially through the same incision, typically using digital traction ('milking'). The procedure may be performed using open or closed techniques, with the closed technique generally associated with lower rates of postoperative scrotal swelling. Closure usually consists of subcutaneous and intradermal layers.

Advantages:
• Familiarity and reproducibility across general practice
• Thicker skin allows secure closure and reduced superficial bleeding
• Small, cosmetically discrete incision

Disadvantages:

- Requires traction and tunneling of testes, potentially increasing tissue trauma
- Leaves an empty scrotal dead space, predisposing to hematoma or seroma formation
- Rare but serious complications include urethral trauma

Scrotal Approach Orchiectomy (Scrotal Incision)

Scrotal approach orchiectomy entails direct incision through the scrotal skin to access and remove the testes. This approach minimizes the need for cranial traction and may be performed through a single median scrotal incision or bilateral incisions. In adult dogs, scrotal incisions are commonly closed with absorbable sutures or tissue adhesive.

Advantages:
• Reduced tissue tunneling and traction
• Shorter operative times in multiple comparative studies
• Comparable complication rates to prescrotal orchiectomy
• Lower odds of postoperative self-trauma in some cohorts

Disadvantages:
• Scrotal skin is highly vascular, increasing superficial bleeding risk
• Early postoperative bruising and edema may appear dramatic to owners
• Technique and closure method sensitive to patient behavior and compliance

Orchiectomy with Scrotal Ablation (Scrotectomy)

Scrotal ablation involves surgical removal of scrotal skin and dartos muscle, typically performed in conjunction with orchiectomy. This procedure eliminates scrotal dead space and is most commonly indicated in dogs with excessive pendulous scrotum, scrotal pathology, or severe post-castration complications such as hematoma or necrosis.

Indications:
• Large or pendulous scrotum in older dogs
• Chronic scrotal dermatitis, trauma, neoplasia, or necrosis
• Salvage procedure for severe scrotal hematoma or infection

Disadvantages:
• Greater surgical magnitude and tissue dissection
• Increased bleeding risk requiring meticulous hemostasis
• Larger incision and potentially longer recovery period

Representative Clinical Case Examples

Case 1 – Large-Breed Adult Dog: A 7-year-old Labrador Retriever with a large pendulous scrotum underwent orchiectomy with concurrent scrotal ablation to reduce dead space. Recovery was uneventful, with excellent cosmetic outcome and no postoperative swelling.

Case 2 – High-Volume Shelter Setting: Pediatric dogs (2–5 months) castrated via sutureless scrotal approach demonstrated significantly reduced surgical times and low complication rates, supporting scrotal techniques in population medicine.

Case 3 – Post-Castration Complication: An adult mixed-breed dog developed a severe scrotal hematoma after routine prescrotal orchiectomy, requiring secondary scrotal ablation. Definitive surgery resolved the complication without long-term sequelae.

Clinical Decision-Making Summary

No single neutering approach is universally superior. Prescrotal orchiectomy, scrotal approach orchiectomy, and orchiectomy with scrotal ablation each have well-defined roles. Optimal technique selection depends on patient age, scrotal conformation, behavior, concurrent disease, and surgeon experience. Understanding the advantages and limitations of each method allows tailored, evidence-informed surgical planning.