

Case Report

Surgical Treatment of Brachycephalic Airway Syndrome in a British Breed Cat Using Bilateral Wedge Resection of the Dorsolateral Nasal Cartilage

British İrkı Bir Kedide Brakisefalik Hava Yolu Sendromunun Dorsal Lateral Nazal Kıkırdağın Bilateral Kama Rezeksiyonu Tekniği ile Cerrahi Tedavisi

Zülfükar Kadir SARITAŞ^{1✉}, Musa YILMAZ¹

¹Department of Surgery, Faculty of Veterinary Medicine, Afyon Kocatepe University, Afyonkarahisar

Corresponding Author:

Zülfükar Kadir SARITAŞ
✉zksaritas@hotmail.com

ORCID:

ZKS: 0000-0002-7659-6635
MY: 000-0001-6557-9613

Received: 07.03.2026

Accepted: 01.07.2026

Published: 15.09.2026

Citation:

Sarıtaş ZK, Yılmaz M. Surgical Treatment of Brachycephalic Airway Syndrome in a British Breed Cat Using Bilateral Wedge Resection of the Dorsolateral Nasal Cartilage. Kocatepe Veterinary Journal (2026) 19 (3): 424-431

Copyright: © 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the [Creative Commons Attribution \(CC BY-NC 4.0\) license](https://creativecommons.org/licenses/by/4.0/).



Abstract

Brachycephalic Obstructive Airway Syndrome (BOAS) is a disorder associated with anatomical abnormalities of the upper airway and is commonly observed in brachycephalic dog breeds. Although BOAS has been extensively described in dogs, the available data regarding its occurrence and surgical management in cats remain limited. This case report describes the surgical treatment of BOAS caused by stenotic nares in a British Shorthair cat using bilateral wedge resection of the dorsolateral nasal cartilage. The patient was presented to the clinic with complaints of respiratory distress and open-mouth breathing during sleep. According to the anamnesis, these clinical signs had been present for an extended period. Clinical examination revealed a 3.5-year-old, gray-colored, neutered male British Shorthair cat with severe stenosis of the external nares. Radiographic and computed tomographic examinations confirmed marked narrowing of the nasal openings. Preoperative complete blood count and serum biochemical analyses revealed no evidence of systemic disease. During surgery, bilateral wedge resection of the dorsolateral nasal cartilage was performed to facilitate abduction of the nasal alae and reduce resistance to inspiratory airflow. No postoperative complications were observed, and the patient demonstrated marked clinical improvement following the procedure. In conclusion, bilateral wedge resection of the dorsolateral nasal cartilage appears to be a safe and effective surgical technique for the correction of stenotic nares in cats. Appropriate patient selection and careful surgical planning may contribute to rapid and sustained improvement in respiratory function.

Keywords: Brachiocephalic obstructive airway syndrome, Cat, Stenotic nares, Rhinoplasty surgery

Öz

Brakisefalik Obstrüktif Hava Yolu Sendromu (BOAS), üst solunum yolunun anatomisinden kaynaklanan, belirli köpek ırklarında görülen bir rahatsızlıktır ve genellikle brachicephalic ırklarda görülmektedir. Köpeklerde yaygın olsa da, kedilerdeki cerrahi tedavi yaklaşımları ile ilgili mevcut veriler sınırlıdır. Bu vaka sunumu, daralmış burun delikleri nedeniyle bir British ırkı kedide BOAS' in cerrahi tedavisini, dorsal lateral burun kıkırdağının iki taraflı kesilmesi ile tanımlamaktadır. Vaka, nefes alma zorluğu ve uyku sırasında açık ağızla nefes alma şikayetleriyle kliniğe getirilmiştir. Sorunun uzun süredir mevcut olduğu olgu tanımı belirlenmiştir. Klinik muayenede, 3,5 yaşında gri renkli British Shorthair ırkı kısır erkek kedi olduğu tespit edilmiş olup ileri derecede daralmış burun deliklerinin olduğu görülmüştür. Radyografik ve tomografik değerlendirmeler, burun açıklıklarının ciddi şekilde daraldığını doğrulamıştır. Preoperatif hemogram ve biyokimyasal analizlerde, sistemik patoloji bulunmamıştır. Cerrahi işlem sırasında, burun kanatlarının abduksiyonuna izin vermek ve inspiratuar hava akışına karşı direnci azaltmak amacıyla, dorsolateral burun kıkırdağı iki taraflı olarak kesilmiştir. Postoperatif dönemde komplikasyon gözlemlenmemiştir ve kedi belirgin bir klinik gelişim göstermiştir. Sonuç olarak, dorsal lateral nazal kıkırdağın bilateral kama rezeksiyonu tekniğinin, kedilerde stenotik nareslerin tedavisinde etkili ve güvenli bir yöntem olduğu kanıtlanmıştır. Stenotik nares cerrahisinde hasta seçimi ve cerrahinin planlaması, solunum fonksiyonlarında hızlı ve kalıcı düzeltmeler yapılmasını sağlamaktadır.

Anahtar Kelimeler: Brakisefalik obstrüktif hava yolu sendromu, Kedi, Stenotik nares, Rinoplasti cerrahisi

Introduction

Brachycephalic obstructive airway syndrome (BOAS) is a well-recognized etiological cause of respiratory distress in brachycephalic dog breeds. In these breeds, the shortened skull conformation is associated with narrowing of the nasal cavity and nasopharyngeal passages; these morphological alterations result in increased inspiratory airway resistance. Although airway obstruction in brachycephalic dogs is known to occur at multiple anatomical levels, stenotic nares and an elongated, hyperplastic soft palate are considered the primary contributors to upper airway obstruction (Schwartz, 2024).

Brachycephalic syndrome is a well-defined clinical condition characterized by the concurrent presence of inherited anatomical abnormalities observed in various dog and cat breeds. Selective breeding practices aimed at achieving a shortened skull conformation disrupt craniofacial morphogenesis, leading to a marked disproportion between the viscerocranium and the neurocranium. These structural deformities predispose brachycephalic breeds to anatomical narrowing and obstruction at multiple segments of the upper respiratory tract, thereby forming the pathophysiological basis of the syndrome (Oechtering et al., 2016).

Traditionally, descriptions of brachycephalic airway obstruction have primarily focused on the primary anatomical abnormalities caused by stenotic nares and an elongated, thickened soft palate. Less commonly, and with variability among breeds, additional anomalies such as everted lateral laryngeal ventricles, laryngeal collapse, and tracheal hypoplasia have also been reported. Although the principal morphological distinction between brachycephalic and normocephalic dogs is the marked shortening of the nasal bones, the contribution of the nasal cavity to upper airway obstruction has received comparatively limited attention in the literature (Oechtering et al., 2016).

Among the breeds most commonly affected by Brachycephalic Obstructive Airway Syndrome (BOAS) are the English Bulldog, Boston Terrier, Pug, and Pekingese. However, the Cavalier King Charles Spaniel (CKCS) has been reported to be disproportionately overrepresented among BOAS cases in both the United Kingdom and Australia (Lindsay et al., 2020).

The shortened maxillary morphology observed in brachycephalic dogs contributes to the development of the primary components of BOAS, including stenotic nares, an elongated soft palate, abnormal nasopharyngeal turbinate structures, tracheal hypoplasia, and excessive pharyngeal folds. Increased airway resistance and turbulent airflow lead to mucosal inflammation, thereby predisposing affected animals to the development of secondary BOAS changes. These secondary alterations include everted laryngeal sacculles, laryngeal collapse, bronchial collapse, and tonsillar hyperplasia (Lindsay et al., 2020).

In contrast, studies investigating health problems associated with these anatomical features in brachycephalic cats remain limited. This lack of research makes it unclear whether brachycephaly results in respiratory and other health disorders that manifest differently or have distinct impacts in cats compared to dogs. Nevertheless, the available literature suggests that cats with shortened nasal bones and reduced cranial dimensions are at an increased risk of developing respiratory and other health-related problems (Farnworth et al., 2016).

Among the health problems associated with brachycephaly in cats, the prevalence of brachycephalic obstructive airway syndrome (BOAS) has been investigated only to a limited extent in the literature; however,

clinical observations suggest that the condition may be relatively common. Similar to dogs, anatomical alterations of the upper respiratory tract in cats include stenotic nares, an elongated soft palate, and aberrant or crowded nasopharyngeal turbinates. These structural changes increase airway resistance and may result in stertorous or stridulous respiration. In severe cases, brachycephaly-related anatomical abnormalities can lead to laryngeal trauma, inflammation and associated edema, laryngeal collapse, nasopharyngeal stenosis, and upper airway obstruction. As in dogs, surgical intervention may be required to alleviate these conditions (Farnworth et al., 2016).

Case Description

The material of this case report consisted of a neutered male British Shorthair cat presented to the Surgery Clinic of the Afyon Kocatepe University Veterinary Health Practice and Research Center with complaints of respiratory difficulty and sleeping with an open mouth. According to the anamnesis obtained from the owner, the cat was 3.5 years old and had exhibited stenotic nares and open-mouth breathing during sleep since adoption. Clinical examination confirmed that the patient was a gray-colored, neutered male British Shorthair cat weighing 3.7 kg. The general physical condition, blood count (Table 1) and biochemistry results (Table 2) of the cat were unremarkable; however, marked narrowing of the nasal alae (Figure 1-a) was observed, resulting in increased respiratory effort. Radiographic (Figure 2) and computed tomographic (Figure 3,4) examinations confirmed severe stenosis of the external nares, and surgical intervention was therefore recommended. At the postoperative day 14 follow-up examination, complete healing of the surgical site was observed, and suture removal was performed. During the 2-month postoperative re-evaluation, the nostrils were found to be markedly widened compared with the preoperative condition, and the patient exhibited improved respiratory function with no evidence of respiratory distress.



Figure 1. A. Preoperative image, B. Postoperative image

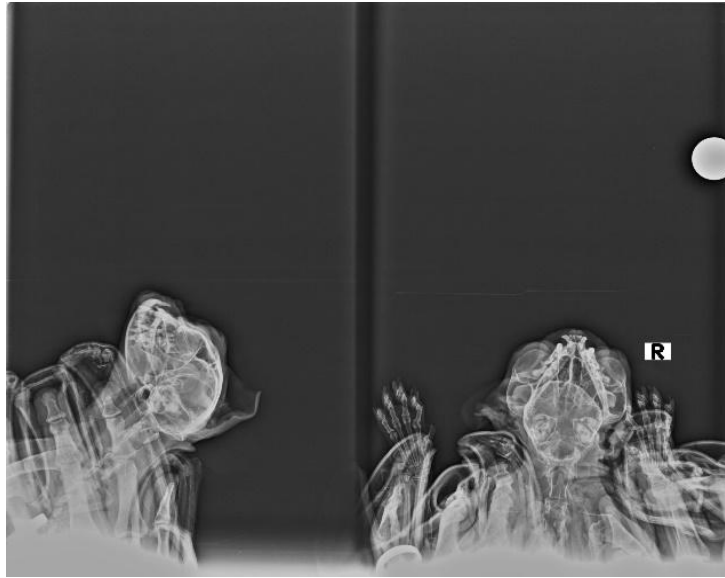


Figure 2. Radiographic Image of the Patient

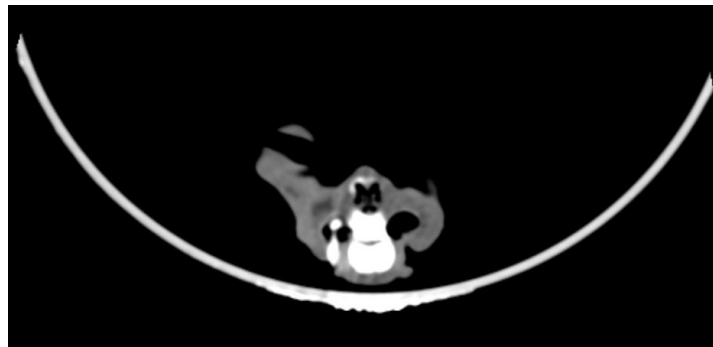


Figure 3. CT sagittal image for case.

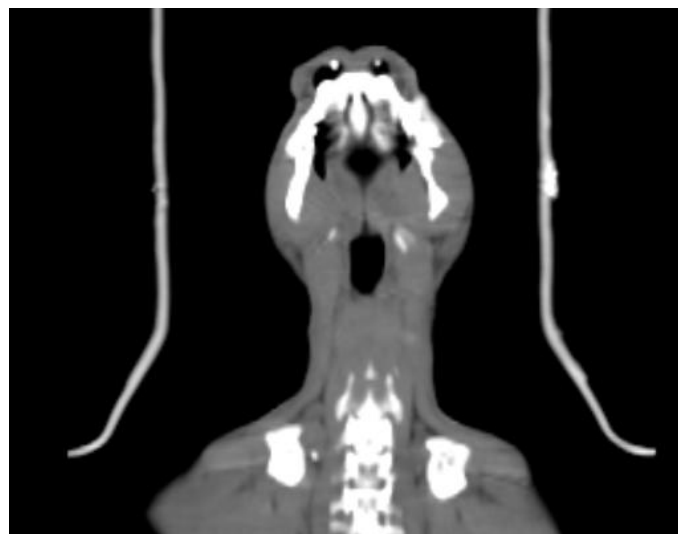


Figure 4. CT coronar image for case.

The patient was premedicated with medetomidine at a dose of 80 µg/kg (Domitor® 1 mg/mL, Zoetis, Türkiye). Anesthesia was induced with propofol at a dose of 4 mg/kg (Propofol-PF 1%, 200 mg/20 mL, Polifarma, Türkiye). Following endotracheal intubation, anesthesia was maintained with isoflurane (Isoflurane USP

100%, 100 mL, Adeka, Türkiye). The cat was positioned in sternal recumbency, and the head was stabilized (Figure 5-a). The surgical site was scrubbed with chlorhexidine solution repeatedly until all visible debris was removed. The area was then rinsed with 70% alcohol and aseptically prepared using povidone-iodine solution (Figure 5-b). Using a No. 11 scalpel blade, a wedge-shaped skin incision was made adjacent to the alar margin of the nasal planum, extending along the dorsolateral nasal cartilage. The incision was deepened through the skin and dorsolateral nasal cartilage to achieve a full-thickness wedge resection (Figure 5-c, d). The defect created by the wedge resection was closed with 5-0 monofilament Polypropylene (PROLEN, ETHICON, Co. USA) sutures placed in a simple interrupted pattern, resulting in abduction of the alar wing and widening of the nostril (Figure 5-e). The same surgical procedure was repeated on the contralateral side (Figure 5-f) (Figure 1-b).

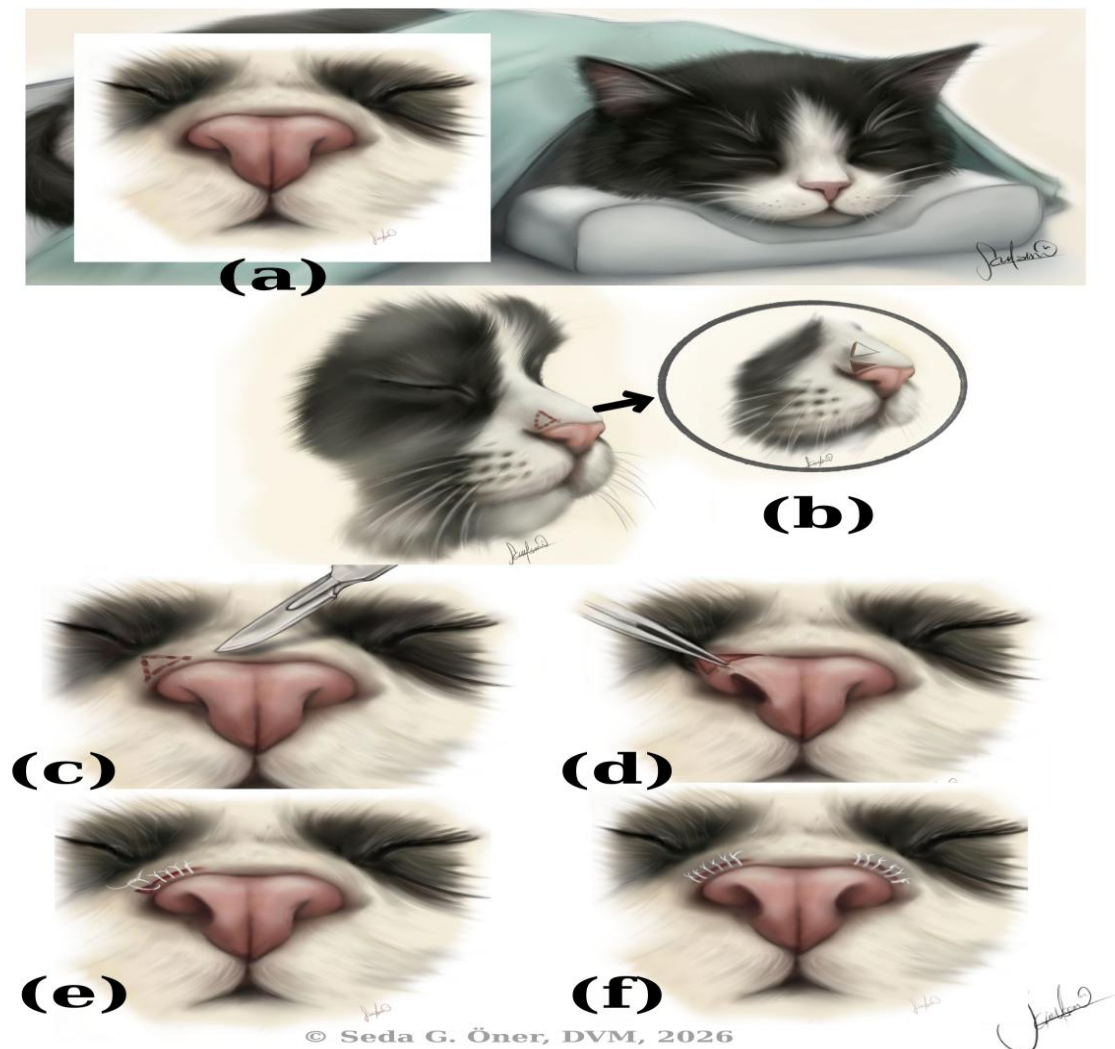


Figure 5. Surgical correction of stenotic nares in a brachycephalic cat using the bilateral wedge resection technique of the dorsolateral nasal cartilage. (a) Shows a preoperative image of the patient with nostrils that are very narrow. (b) Side view of the nasal planum with a marked area of triangular wedge resection on the dorsolateral side of the nostril. (c) A dorsolateral wedge incision is made along the nasal cartilage via a No. 11 scalpel blade. (d) Marked full-thickness wedge tissue segment excised. (e) Surgical defect closed with simple interrupted sutures in monofilament, resulting in alar wing abduction. (f) Right after the surgery, the nostrils and nasal opening are wider.

Table 1. Patient's Blood Count Results

Parameter	Result	Reference Range
WBC	9.18 10 ⁹ /L	3.46 – 17.50
Neu#	4.06 10 ⁹ /L	1.95 – 11.50
Lym#	4.56 10 ⁹ /L	0.73 – 7.40
Mon#	0.32 10 ⁹ /L	0.06 – 0.98
Eos#	0.19 10 ⁹ /L	0.04 – 1.48
Bas#	0.05 10 ⁹ /L	0.00 – 0.25
Neu%	% 44.2	30.0 – 83.5
Lym%	% 49.7	7.0 – 60.0
Mon%	% 3.5	0.8 – 8.0
Eos%	% 2.1	0.5 – 11.5
Bas%	% 0.5	0.0 – 2.3
RBC	8.77 10 ¹² /L	6.30 – 11.82
HGB	14.1 g/dL	9.0 – 16.0
HCT	% 40.5	26.0 – 50.2
MCV	46.2 fL	34.0 – 55.0
MCH	16.1 pg	11.0 – 18.0
MCHC	348 g/L	285 – 384
RDW-CV	% 15.6	14.2 – 26.6
RDW-SD	25.6 fL	22.0 – 39.6
PLT	252 10 ⁹ /L	140 – 595
MPV	15.2 fL	8.6 – 18.4
PDW	14.9 (10GSD)	12.0 – 17.5
PCT	3.84 mL/L	1.50 – 9.00
IPF	% 12.8	0.7 – 28.0

Table 2. Patient's Biochemistry Result

Parameter	Result	Reference Range
Albumin	3.36	g/dL
Globulin	3.21	g/dL
A/G Oranı	1.05	–
Urea	50.38	mmol/L
BUN	23.5	mg/dL
Creatinine	1.33	mg/dL
ALT	83	U/L
AST	52	U/L
ALP	25	U/L
GGT	<1	U/L
Total Bilirubin	0.07	mg/dL
Glucose	206	mg/dL
Total Protein	5.7	g/dL

Discussion and Conclusion

Brachycephalic Obstructive Airway Syndrome (BOAS) is a complex condition affecting the respiratory system of brachycephalic breeds as a result of anatomical narrowing of the upper airways. Although BOAS has been widely described in dogs, it is reported less frequently in cats, leading to a limited number of studies and case reports in the literature (Hendricks, 1992; Oechtering, 2010).

This has resulted in a relatively low level of evidence regarding the efficacy and safety of surgical techniques performed in cats. The present surgical approach was planned based on a recently described technique involving bilateral wedge resection of the dorsolateral nasal cartilage (Chen and Chang, 2023). In that study, the authors reported that resection of excessive dorsolateral nasal cartilage led to abduction of the nasal alae, thereby widening the nares and significantly reducing resistance to inspiratory airflow. The clinical improvement observed in the present case is consistent with these findings and supports the use of this technique for the surgical correction of stenotic nares in cats. In this context, approximation of the dorsolateral nasal cartilage following wedge resection appears to be a rational and effective approach, particularly when considering the species-specific anatomical characteristics of feline patients (Chen and Chang, 2023).

Furthermore, Wallace (2024) reported that a variety of surgical techniques have been described for the correction of stenotic nares, including vertical wedge resection, horizontal wedge resection, the Trader technique, dorsal offset rhinoplasty, and ala vestibuloplasty. However, current evidence remains insufficient to demonstrate the superiority of any single technique over the others. Consequently, the selection of a surgical approach is often based on surgeon preference, patient-specific anatomical characteristics, and clinical experience. This highlights the importance of case reports and clinical studies evaluating novel surgical techniques in cats, as such reports contribute to the growing body of evidence regarding the safety, efficacy, and long-term outcomes of these procedures.

Only a limited number of case reports have described surgical treatment of BOAS in cats. These reports indicate that surgical revision of stenotic nares contributes to the alleviation of clinical signs associated with the condition (Moses and Williams, 2016). The absence of postoperative complications in the present case further suggests that this technique can be performed safely in cats when appropriate patient selection and meticulous surgical planning are ensured. However, the small size and delicate nature of feline nasal structures necessitate caution to avoid excessive tissue resection during surgery. As BOAS is a multifactorial syndrome, surgical correction of stenotic nares alone may not result in clinical improvement in every case. In the presence of concurrent abnormalities such as an elongated soft palate, everted laryngeal sacculles, or tracheal hypoplasia, combined surgical interventions may be required (Oechtering et al., 2016).

In this study, a novel surgical technique involving bilateral resection of excessive dorsolateral nasal cartilage followed by immediate abduction of the nasal ala was described, and its effectiveness in the correction of stenotic nares was demonstrated. The applied procedure not only directly reduced resistance to inspiratory airflow but also resulted in a high clinical success rate, leading to a marked improvement in the patient's quality of life.

This technique is considered particularly advantageous in cats, as resection of the elongated dorsolateral nasal cartilage prior to abduction eliminates the primary obstruction within the nasal airflow pathway. Consequently, this approach contributes to rapid and marked improvement in respiratory function during the postoperative period.

The clinical outcome observed in the present case is in agreement with the findings of Chan and Chang (2023), supporting the efficacy and safety of bilateral wedge resection of the dorsolateral nasal cartilage for the surgical management of feline stenotic nares.

Conflict of interest: No conflict of interest declared

For Studies That Do Not Require Ethics Committee Approval: This study is not subject to the permission of HADYEK in accordance with the “Regulation on Working Procedures and Principles of Animal Experiments Ethics Committees” 8 (k). The data, information, and documents presented in this article were obtained in accordance with academic and ethical rules.

Obtaining Informed Consent: All participants provided written informed consent prior to data collection

CRedit author statement: **ZKS:** Conceptualization, Methodology, Software, Writing- Reviewing and Editing **MY:** Data curation, Writing- Original draft preparation, Writing. All authors have read and agreed to the published version of the manuscript.

Acknowledgements: We would like to express our sincere gratitude to DVM Seda Gülşen Öner for her valuable contributions to this case report through the preparation of the illustrations.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

- Chen, Y. C., & Chang, Y. S. (2023). A novel surgical approach for feline stenotic nares: Bilateral wedge resection of the dorsal lateral nasal cartilage in seven cases. *Veterinary Medicine and Science*, 9(6), 2430–2437.
- Farnworth, M. J., Chen, R., Packer, R. M., Caney, S. M., & Gunn-Moore, D. A. (2016). Flat feline faces: Is brachycephaly associated with respiratory abnormalities in the domestic cat (*Felis catus*)? *PLoS ONE*, 11(8), e0161777.
- Hendricks, J. C. (1992). Brachycephalic airway syndrome. *Veterinary Clinics of North America: Small Animal Practice*, 22(5), 1145–1153.
- Lindsay, B., Cook, D., Wetzel, J. M., Siess, S., & Moses, P. (2020). Brachycephalic airway syndrome: Management of post-operative respiratory complications in 248 dogs. *Australian Veterinary Journal*, 98(5), 173–180.
- Moses, N. V., & Williams, J. M. (2016). Surgical management of upper airway obstruction in brachycephalic cats. *Journal of Feline Medicine and Surgery*, 18(9), 733–739.
- Oechtering, G. U. (2010). Brachycephalic syndrome—New information on an old congenital disease. *Veterinary Surgery*, 39(1), 2–4.
- Oechtering, G. U., Pohl, S., Schlueter, C., Lippert, J. P., & Alef, M. (2016). A novel approach to brachycephalic syndrome: Laser-assisted turbinectomy. *Veterinary Surgery*, 45(2), 173–181.
- Schwartz, P. (2024). Brachycephalic obstructive airway syndrome in dogs and cats. *Techniques in Small Animal Soft Tissue, Orthopedic, and Ophthalmic Surgery*, 56–81.
- Wallace, M. L. (2024). Surgical management of brachycephalic obstructive airway syndrome: An update on options and outcomes. *Veterinary Surgery*, 53(7), 1173–1184