CHAPTER III
MATERIALS AND METHODS

The present clinical work was carried out in Department of Veterinary Surgery and Radiology on dogs presented at TVCC, Veterinary College, J.A.U., Junagadh. With the complaints of halitosis, sticky salivation, facial swelling and others. All the dogs presented with periodontal diseases were diagnosed on the basis of clinical examination and treated under general anesthesia accordingly.

3.1 INCIDENCE

The records of cases presented at out-patient department of TVCC department, Junagadh during the period from March 2014 to March 2017 were screened to bring forth the occurrence of different dental affections in dogs. The clinical cases were classified under different age groups viz. Less than 3 years, 3-6 years and more than 6 years. The cases of dental affections in dogs were also classified in relation to breed and sex of dogs.

3.2 GENERAL EXAMINATION

3.2.1 Case history and initial examination of oral cavity

All the animals were subjected for history and clinical examination. Detail investigation regarding age, breed, sex of affected animals and symptoms exhibited such as halitosis, pawing at mouth, abnormal salivation, facial swelling as well as details regarding dental home care such as brushing teeth, mouth wash, type of food supplied, details of earlier treatment if any and relevant data were collected. All the data were subjected to detail analysis for the prevalence of disease.

3.2.2 Haematobiochemical studies

3.2.2.1 Collection and Examination of Blood Samples

Blood samples were collected from all twenty dogs before treatment (0 day) and 10th day post treatment for evaluation of haemato-biochemical parameters. Two ml of blood was collected from cephalic vein in a sterile vacutainer containing K3 EDTA. Immediately after collection, blood was processed for evaluation of haemato biochemical parameters using Auto Blood Analyzer *(Abacus Junior Vet5, Diatron, Hungary). The parameters haemoglobin (gram percent), Packed cell volume (percent), total erythrocyte count \((10^3 \text{ cu/mm})\), total leukocyte count \((10^6 \text{ cu/mm})\) and
differential leukocyte count (percent) were recorded in all the animals. Three ml blood was collected in a sterile plain vaccutainer. The vaccutainer were kept in slant position for 2-4 hours and serum was separated in sterile vials. Serum biochemical parameters aspartate amino transferase, alanine amino transferase, blood urea nitrogen, total protein, serum creatinine, calcium and phosphorus were estimated using auto serum biochemical analyzer machine. (Dia- Chem240plus, Diatek)

3.2.3 Preparation of animals

Dogs were prepared for general anaesthesia and subsequent treatment by withholding the food for 24 hours and water for 12 hours before administration of intravenous anaesthetics. Further, body weight of animals was recorded and site for intravenous administration of anaesthetics was prepared.

3.2.4 Anaesthetic protocol

Atropine sulphate @ 0.05 mg/kg b.wt. was administered subcutaneously as a pre-anaesthetic at about 10-15 minutes before administration of general anaesthetics. General anesthesia was induced by administering mixture of diazepam @ 0.5 mg/kg b.wt. and ketamine hydrochloride @ 10 mg/kg b.wt. intravenously (I/V). General anaesthesia was maintained by intravenously (I/V) administration as per requirement induction dose of diazepam-ketamine mixture as per the requirement.

3.2.5 Recording symptomatic features

3.2.5.1 Oral Examination

Oral examination of affected dogs included general oral and soft tissue examination, supragingival tooth examination, sub gingival tooth examinations and recording the findings like Gingival Index (GI), Plaque Index (PI), Calculus Index (CI), Furcation Exposure (FE) and periodontal pocket depth using periodontal probe (Fig.3) as described by Loe and Silness (1963)

3.2.5.2 Grading of Periodontal diseases

The affected dogs with periodontal diseases were graded depending upon severity of periodontal disease on four stage i.e. Stage 1 to 4 PD as described by AVDC Nomenclature Committee.

Stage- 1 (PD1): Gingivitis only, without attachment loss.

Stage- 2 (PD2): Early periodontitis; less than 25 % of attachment loss, or at most there is a stage 1 furcation involvement. The loss of periodontal attachment is less than 25 % as measured either by probe.

Stage- 3 (PD3): Moderate periodontitis; 25–50 % of attachment loss.
Stage -4 (PD4): Advanced periodontitis; more than 50 % of attachment loss, there is a stage-3 furcation involvement in multi rooted teeth.

3.2.6 Dental Prophylaxis and Periodontal therapy

3.2.6.1 Pre and Post-scaling Antiseptic Oral Lavage

Oral lavage with Chlorhexidine gluconate (Fig. 3) was given before and after scaling to reduce bacterial load in oral cavity.

3.2.6.2 Supra and Sub gingival Scaling

The dental scaling was done in twenty dogs under general anesthesia. The oral cavity was flushed with water by three way syringe. After flushing the oral cavity, with the help of hand piece of ultrasonic piezo scaler unit (Fig 4). Complete removal of plaque and tarter from affected teeth was carried out. Debridement of periodontal pockets and irrigation of gingival sulcus was carried out by three way syringe.

3.2.7 Dental Extraction

Teeth showing severe mobility (M3) upon opposing the tooth between the ends of metal instrument or between a finger and a metal instrument with severe attachment loss were extracted. The bleeding was controlled by digital pressure using gauge sponge.

3.2.8 Microbiological investigations

Sterile cotton swabs were used for collection of samples before treatment from mineralized dental plaque. Total twenty samples were sent to Department of Microbiology for identification of bacterial genera followed by in vitro antimicrobial drug sensitivity testing.

3.2.9 Chemical analysis of dental tarter for the mineral estimation

Dental tarter samples (n=20) were subjected for analysis of calcium, phosphorus, sodium, and potassium other minerals. Samples (Fig 5) were collected from dogs which had moderate to heavy calculus on their teeth. Chemical analysis of dental tarter were carried out using X-ray fluorescence by XRF machine.

3.2.10 Post operative care

Continuous intravenous fluid support as needed was given to patients with monitoring vital signs till the recovery from anesthesia. In cases of moderate to severe gingivitis, antibiotic was given Cefotaxime @ 15mg/kg body weight Post operative findings of treated cases were recorded up to 10 days.
3.2.11 Advices

Home care following dental therapy was an important part of treatment and prevention of dental diseases. Owner were advised to perform daily brushing of teeth, mouth wash by Chlorhexidine solution, provide of artificial bones to chew and restricted feeding i.e. twice in a day. In advanced periodontal disease, monthly check up of dogs was advised to owner. Evaluation and check up of oral cavity at least once in 6 months was advised to all pet owners.

3.2.12 Statistical Analysis

Data obtained was presented as mean ± standard error (SE). Data was analyzed statistically by student’s t-test to observe difference among the 0th and 10th day of treatments.
Fig. 3 Chlorhexidine mouth wash

Fig. 4 Dental scaler unit

Fig. 5 20 Samples of dental tarter for chemical analysis
Fig. 6 Steps for ultrasonic dental scaling and polishing

Stage 3 periodontal disease

Dental scaling using hand piece of ultrasonic piezo scaler

Complete removal of plaque and calculus after dental scaling