THE UNIVERSITY of EDINBURGH
Royal (Dick) School of Veterinary Studies

ROSLIN

Dentistry Equipment and Instrumentation: Organising Your Dentistry Workspace

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Dental Equipment: Why is it so important?

Dentistry caseload in practice- Prevalence of dental conditions. 80% dogs & 70% cats over 3 years old will have periodontal disease.

Right tools for the right job!

Improve efficiency and standard of dentistry and less operator fatigue.

AAHA Dental Guidelines 2019. www.aaha.org/globalassets/02-guidelines/dental/aaha_dental_guidelines.pdf

The Dental Operating Space

- Common limitations- Space & location, equipment position, lighting, table design.
- Consider ergonomic design
- Smoother, more effective procedures.
- Less damage to equipment and instruments.

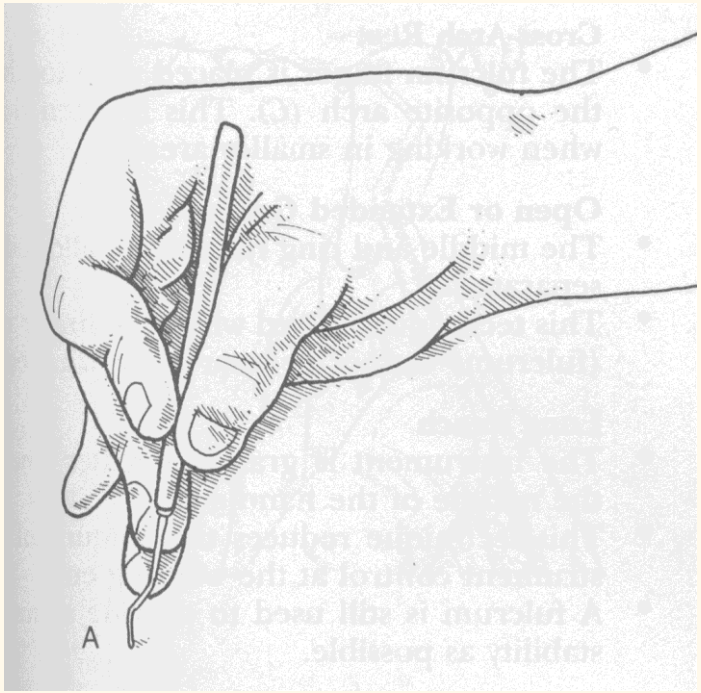
Ergonomics in the Dental Operating Space

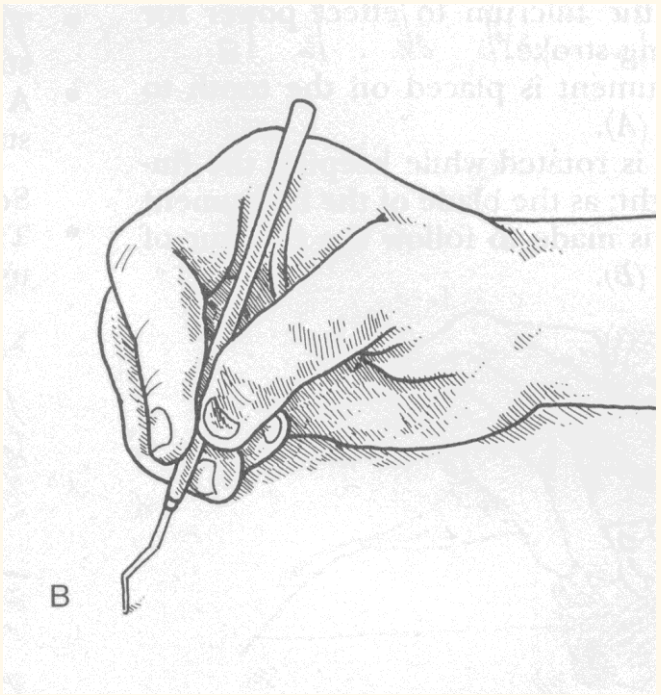
- Definition of Ergonomics- (Human Factors)
- Application of psychological and physiological principle during design of products, processes and systems.
- Goal- enhance safety and comfort and interaction, increase productivity. Reduce human error.

Improving Ergonomics

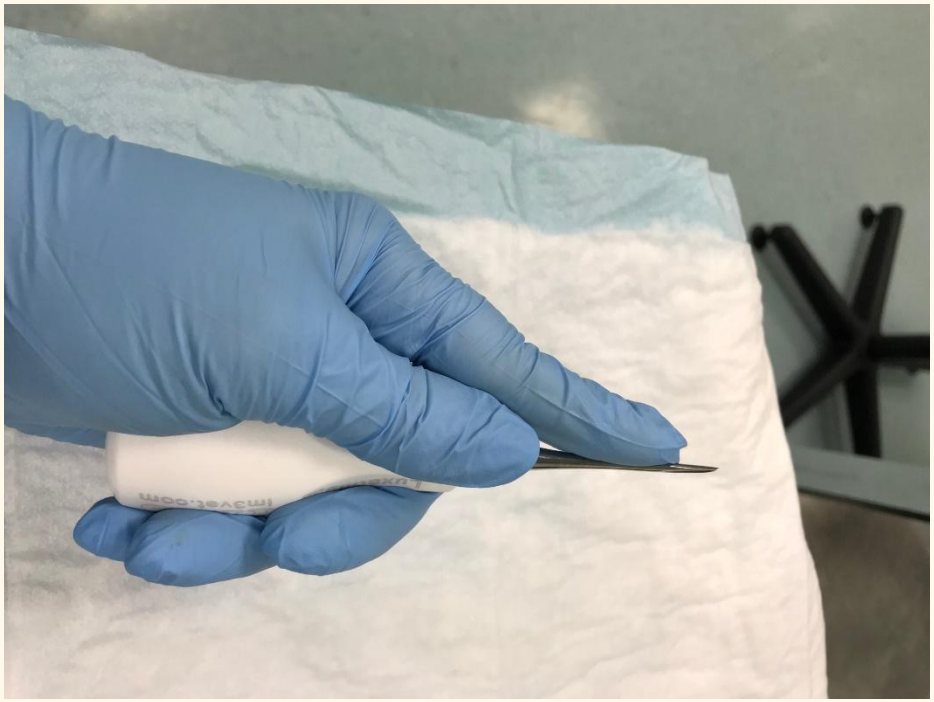
- Table design
- Equipment location
- Patient positioning
- Lighting & Magnification

The Modified Pen-Grip.





Palm Grip



Personal Protective Equipment (PPE)

- Gloves
- Mask
- Goggles/ Eyeshield
- Hair net
- Theatre wear

Patient Comfort & Safety

- Spring loaded gags push TMJ's beyond ROM
- Metal gags damage tooth enamel
- Consider soft rubber wedges
- Relieve gag pressure every 5 mins
- Cats!!

Dental Machines- How do They Work?

- Air driven compressor.
- Oil Vs Oil Free compressor

Dental Machines- Maintenance & Infection Control

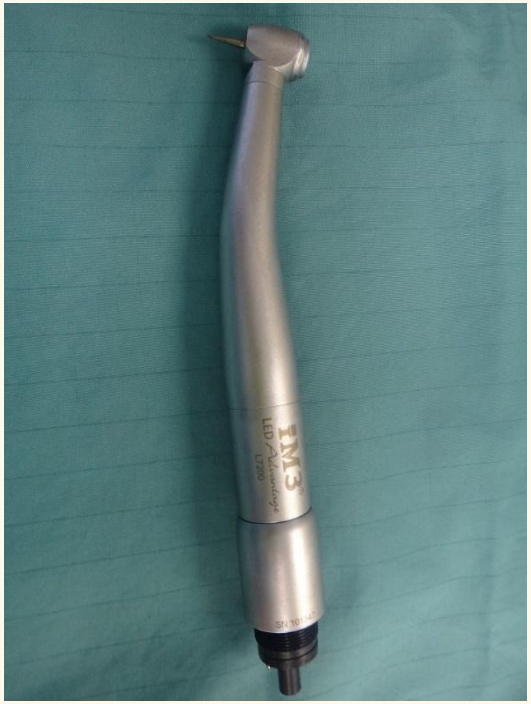
- Daily/weekly- Clean after use, change distilled water & release compressor
- Annual Service- qualified engineer
- Infection control- biofilm- What can we do?
- Troubleshooting & Create Dental SOP's

Ultrasonic Scalers

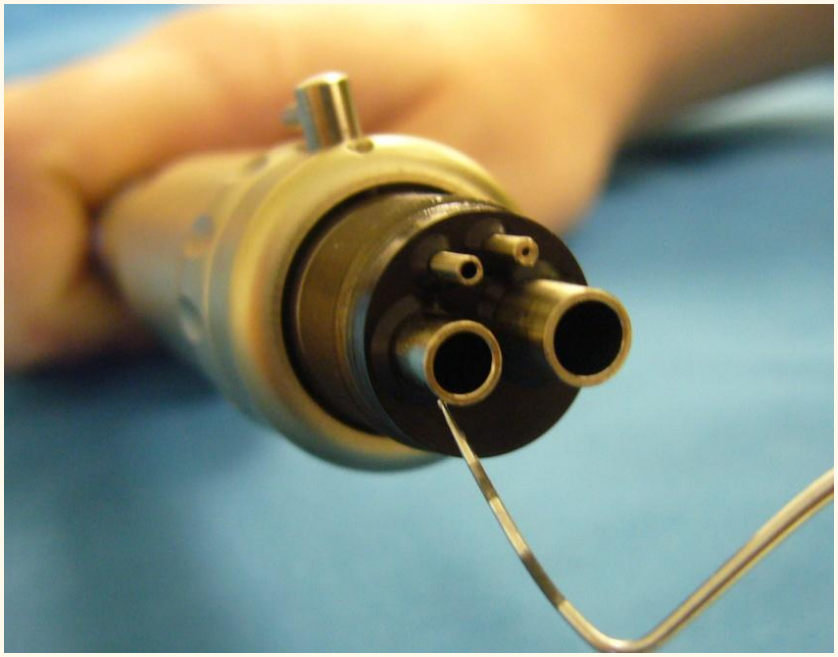
- Magnetorestrictive- move in predictable pattern. Eliptical
- Magnetic field energises water flow on scaler tip.
- Higher frequency range – 40,000Hz.
- Piezoelectric- Linear movement. Adjustable frequency.

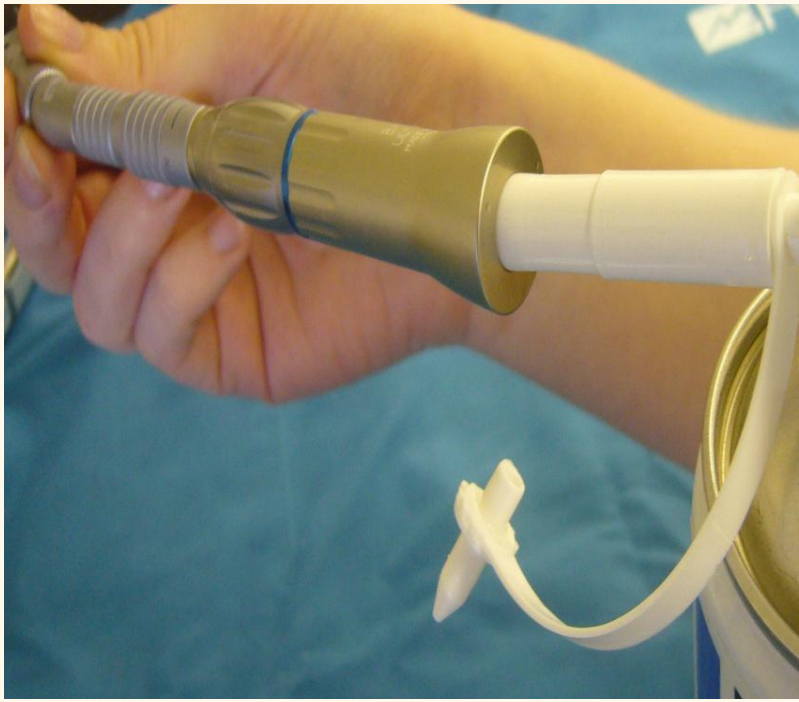
Identifying- Dental Handpieces

Handpiece care, oiling and sterilisation protocol.
!!No Cross Contamination!!

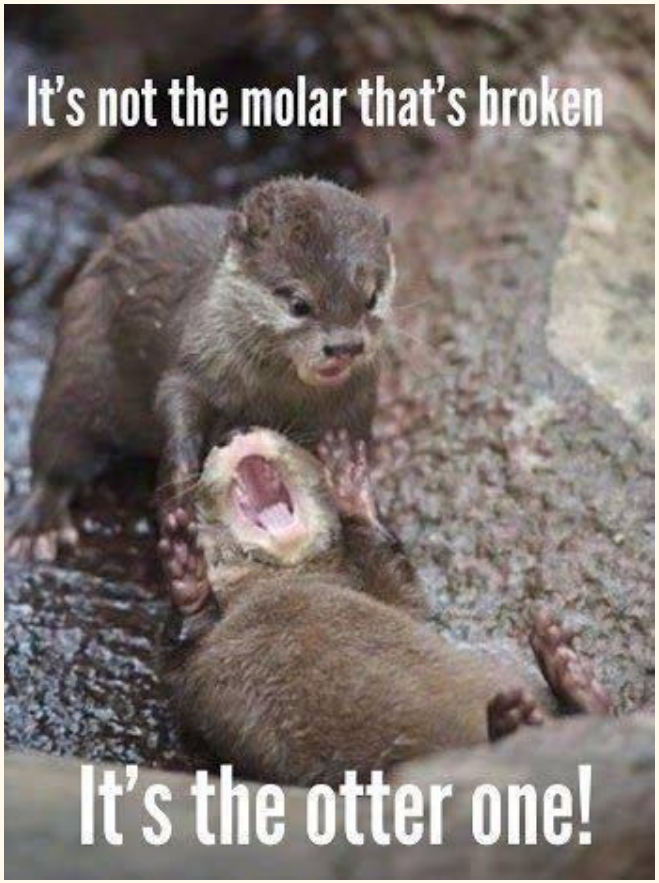


Oiling protocol for Handpieces

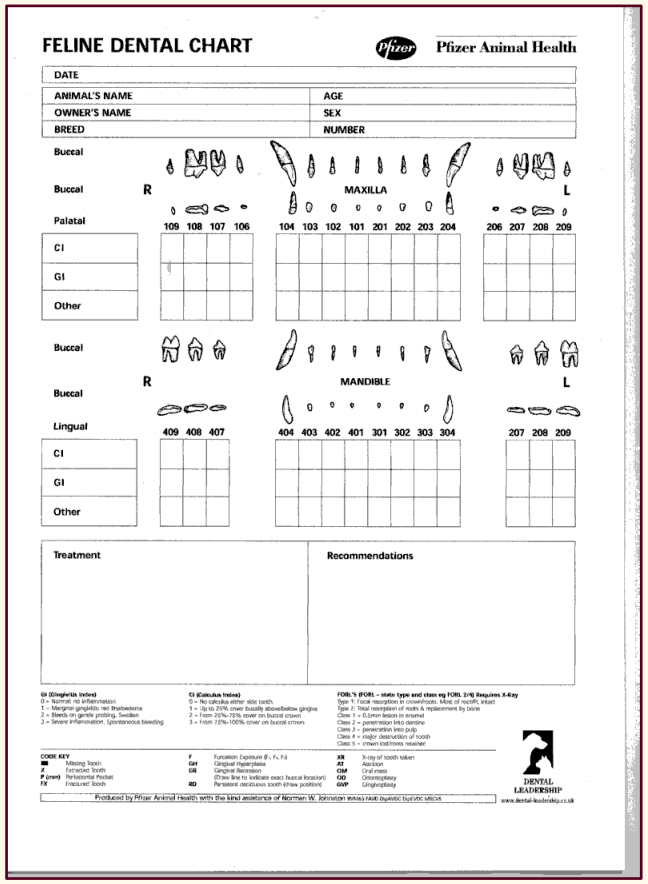




Equipment for the Oral Assessment.



- Separating and organising instruments for different stages of the procedure.
- What do we need available?



FELINE DENTAL CHART

Pfizer Animal Health

DATE

ANIMAL'S NAME	AGE
OWNER'S NAME	SEX
BREED	NUMBER

Buccal

Buccal R MAXILLA L

Palatal

	109	108	107	106	104	103	102	101	201	202	203	204	206	207	208	209
CI																
GI																
Other																

Buccal

Buccal R MANDIBLE L

Lingual

	409	408	407	404	403	402	401	301	302	303	304	207	208	209
CI														
GI														
Other														

Treatment	Recommendations

GI (Gingivitis Index)
0 = Normal: no inflammation
1 = Marginal gingivitis: red finelwaterna
2 = Bleeds on gentle probing. Swollen
3 = Severe inflammation. Spontaneous bleeding

CI (Calculus Index)
0 = No calculus either side tooth
1 = Up to 25% cover buccally above/below gingiva
2 = From 25%-75% cover on buccal crown
3 = From 75%-100% cover on buccal crown

FORL's (FORL – state type and class eg FORL 2/4) Requires X-Ray
Type 1: Focal resorption in crown/roots. Most of tooth intact
Type 2: Total resorption of roots & replacement by bone
Class 1 = 0.5mm lesion in enamel
Class 2 = penetration into dentine
Class 3 = penetration into pulp
Class 4 = major destruction of tooth
Class 5 = crown lost/roots retained

CODE KEY

MI	Missing Tooth	F	Furcation Exposure (F, F1, F2)	XR	X-ray of tooth taken
X	Extracted Tooth	GH	Gingival Hyperplasia	AT	Abrasion
P (mm)	Periodontal Pocket	GR	Gingival Recession	OM	Oral mass
FX	Fractured Tooth		(Draw line to indicate exact buccal location)	OD	Osteoplasty
		RD	Persistent deciduous tooth (draw position)	GVP	Gingivoplasty

Produced by Pfizer Animal Health with the kind assistance of Norman W. Johnston BVMS PhD DipAVDC DipVOHC MRCVS

DENTAL LEADERSHIP
www.dental-leadership.co.uk

Dental Radiography

Periodontal Therapy Kit-What is it for?

- Diagnostic
- Periodontal cleaning and treatment.
- What sterilised instruments should we have?

Periodontal Probes

- Blunt round ended instrument.
- Indentations/coloured bands for measurements.
- Used for gingivitis score and measurements of periodontal disease.
- Sizes and types- 10, 12 and 16mm

Dental explorer

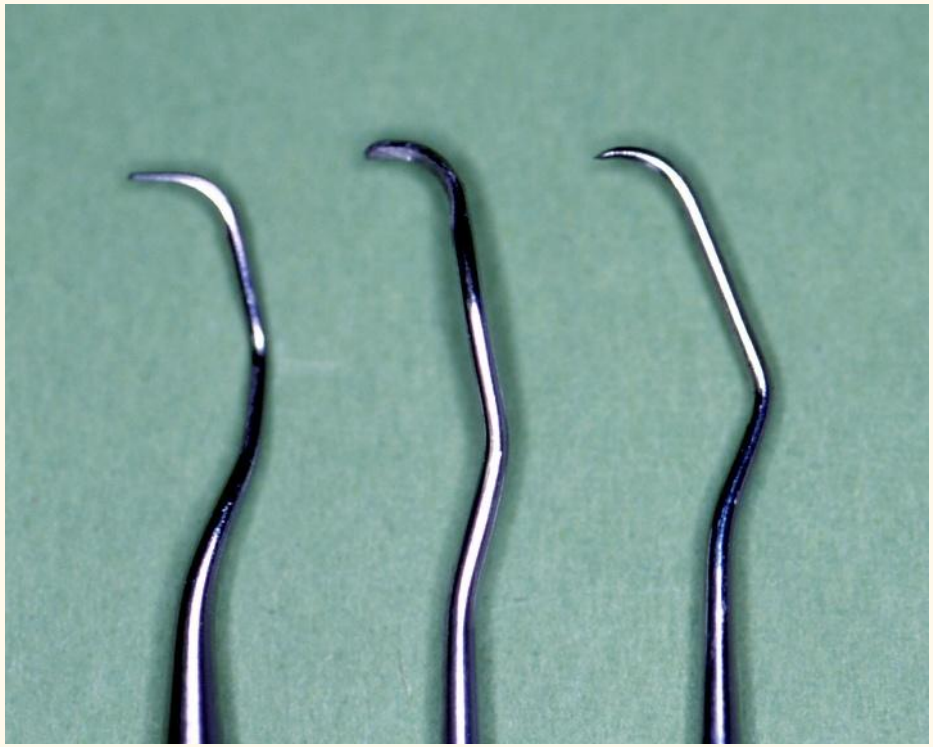
- Sharp pointed tip.
- For use on tooth surface only.
- Find defects, Caries and tooth fractures.
- Types e.g. Shepherds Hook

Dental Mirror and Handle

Supragingival Scaler

- For use on crown of tooth only
- Keep away from gingiva
- Sharp working edges
- Cleaning developmental grooves and fissures and interdental spaces.

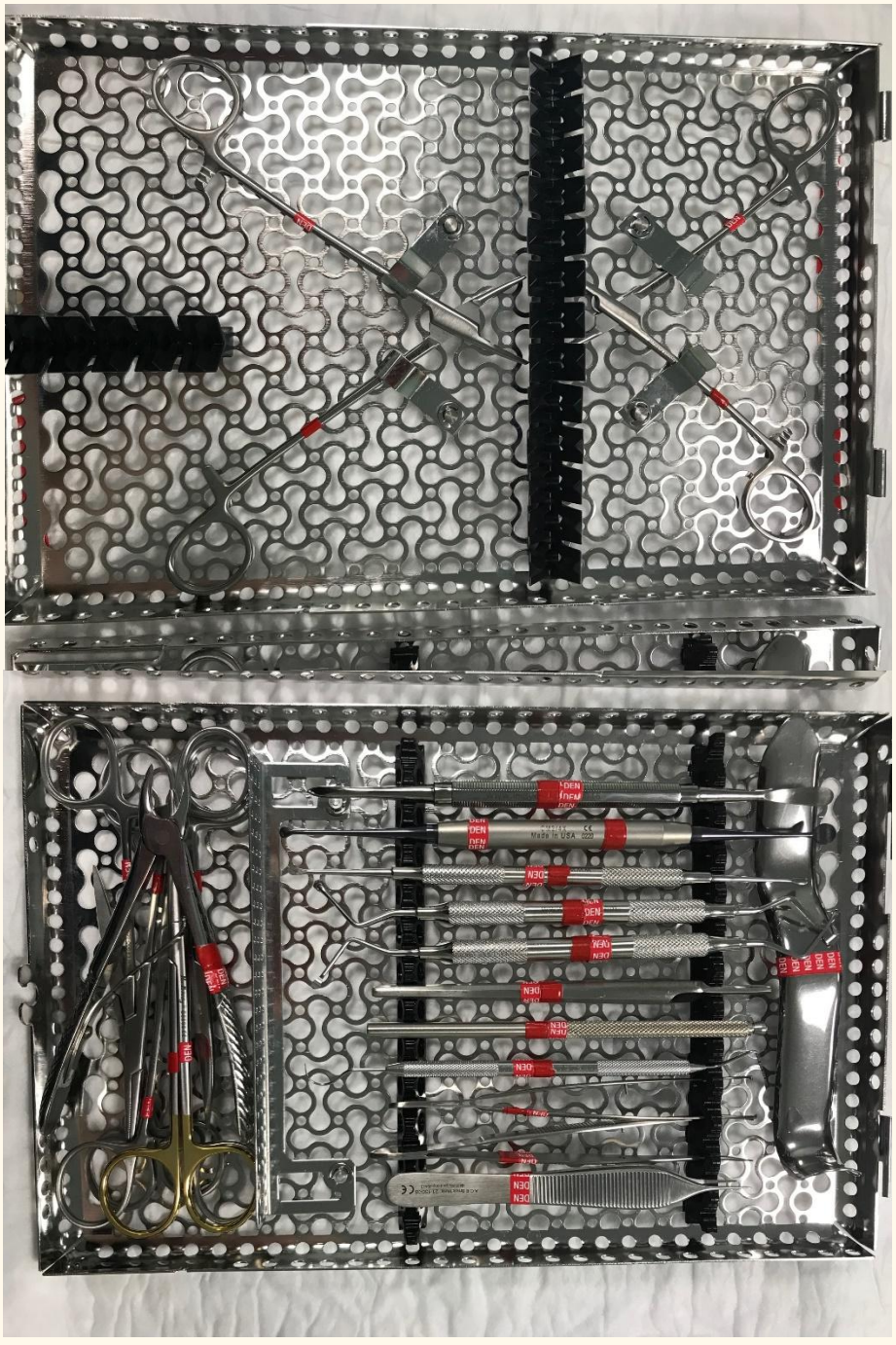
Subgingival Curettes



- Used for subgingival curettage and root planing.
- Used under the gumline i.e perio pockets.
- Curved rounded back
- Gracey curettes- one working edge.

Surgical Extraction Kit

- Ophthalmic instruments
- High quality
- In tray autoclaved & ready



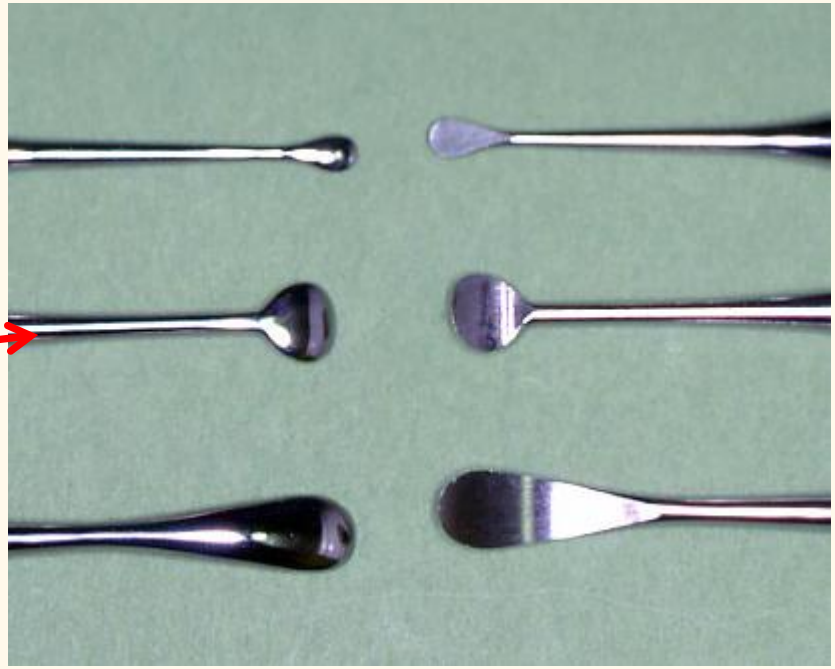
Dental Extraction & Oral Surgery Instruments

Instrument selection – Extractions

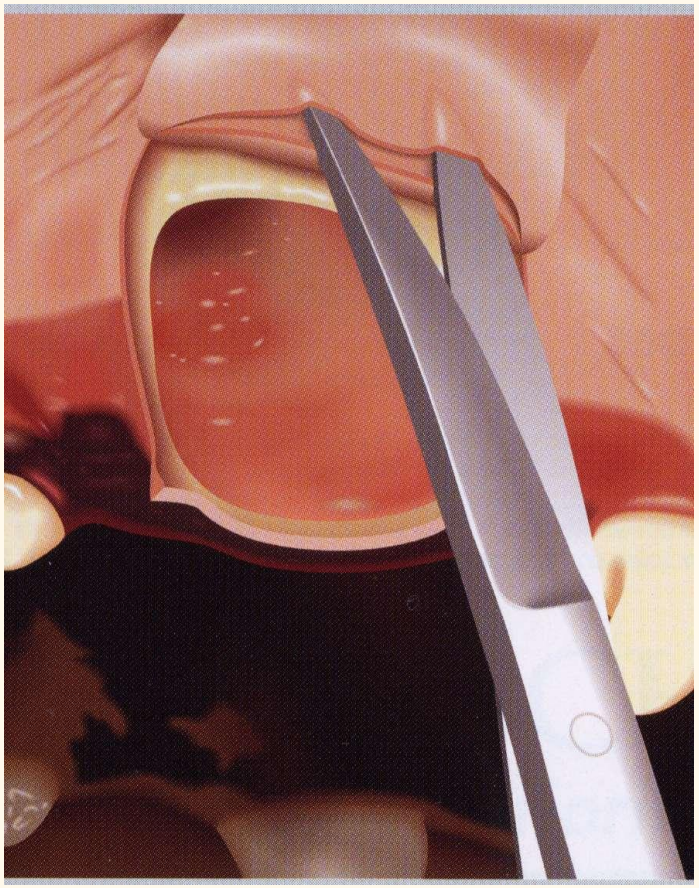
- Instruments to make and close flaps
- Burs to facilitate extraction
- Luxators to cut PL fibres and loosen roots
- Selection of luxator blade sizes
- Extraction forceps
- All sharpened, sterilised & ready to use

Periosteal Elevators

Molt 2/4 periosteal elevator



Surgical Scissors



- Very sharp- separating periosteum.
- Types- Iris, Goldman fox, La Grange
- Metzenbaum- blunt dissection

- Dissecting Forceps.

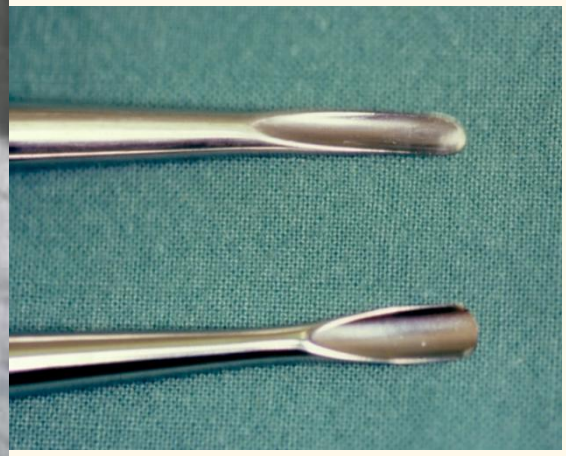
Dental Highspeed Burs

- Friction Grip (FG)
- Tungsten Carbide or Stainless steel.
- Cross cut Taper Fissure-701, 701L
- Round Bur- size 1,2,3 &4

Diamond Burs

- Friction grip (FG)
- Various sizes & shapes,
- Round & rugby ball shaped most useful.
- Grit- Fine - course (recommend medium)
- Used for- alveoloplasty, odontoplasty.

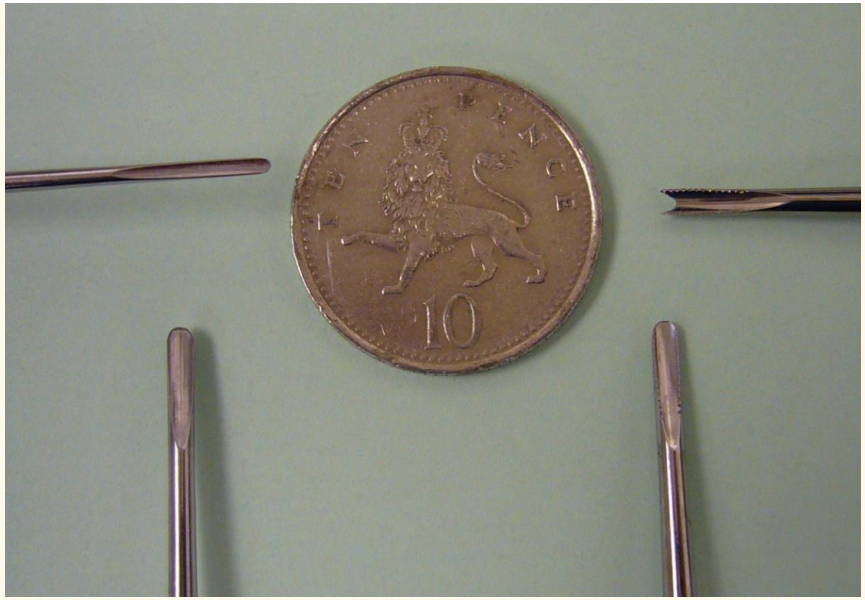
Luxator or Elevator?



Elevator
Thick blade
Used like a shoehorn
Mostly kept above bone crest

Luxtaor
Thin sharp blades to insert into PL space.
Must be sharp & well maintained

Feline Extractions



- Slimline luxating elevators.
- Modified versions

- Atraumatic root pick
- Winged elevators

Extraction Forceps

- Recommend small breed sized forceps.
- Fully closing.
- Cats & Root tips?

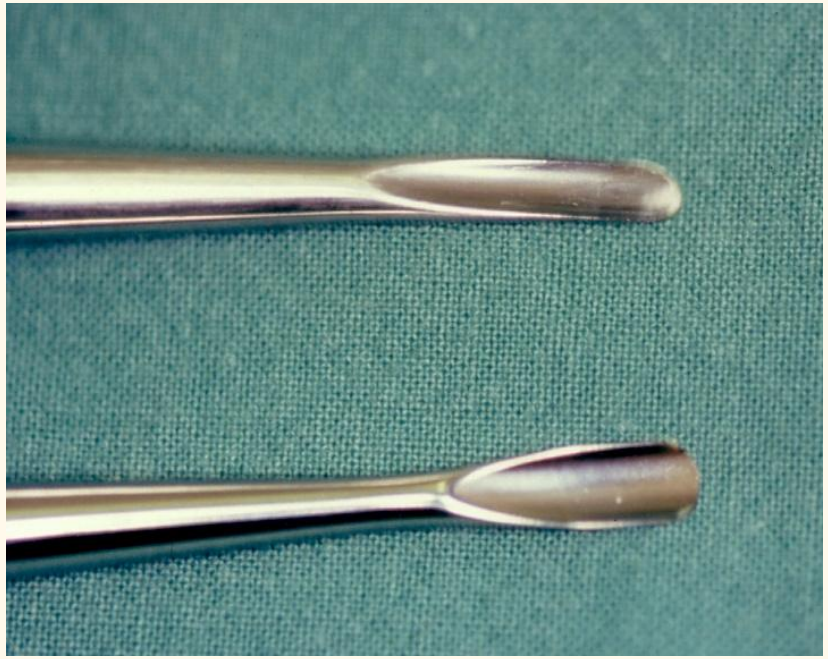
Instrument Sharpening

- Sharpening oil or water – dependent on stone type.
- Stationary stone-moving instrument technique.
- Ensure correct angle for instrument. Gentle pressure required.
- Sharpening Machine!

When and What to Sharpen

- When- After every use. Results in smoother procedures & increased instrument life.

- Hand scalers & Curettes. Periosteal elevators & Luxators/elevators.



Vet-Tome

Equipment advances in Dentistry & Oral Surgery.

- Piezoelectric devices- Ultrasonic bone cutting instruments.
- High powered, low frequency= specific to cutting mineralised tissue.
- Reduced trauma to soft tissue and risk of microfractures compared to oscillating saws and drills.

Alternative Diagnostic Imaging

- Handheld Radiography Units.
- Cone Beam Computed Tomography (CBCT). Increased diagnostic yield for dentoalveolar pathology.
- Limitations

- Ability to evaluate the dental operating space and necessary requirements to improve ergonomics.
- Understand the importance of dental equipment and instrumentation in effective dental procedures.
- Have the ability to identify commonly used dental equipment and instruments. It's care, organisation and maintenance of said equipment.
- Understand the principles behind correct sharpening techniques.

References & Further Reading

- Angel M, 2014, Sharpening Periodontal Instruments, J Vet Dent, Vol:31(1), pg 58-64.
- Ed Reiter AM, Gracis M, BSAVA Manual of Canine and Feline Dentistry and Oral Surgery 4th Ed, 2018, BSAVA, Gloucester.
- Perrone, JR, Small Animal Dental Procedures for Veterinary Technicians & Nurses, 2013, Wiley-Blackwell, Singapore.