ETIOLOGY *of* MALOCCLUSIONS

PREVENTIVE *and* INTERCEPTIVE

ORTHODONTICS

Nov. 2007

Jules E. Lemay III

d.d.s., cert. ortho., F.R.C.D. (C)

Diplomate, American Board of Orthodontics

EPIDEMIOLOGY OF MALOCCLUSIONS

- **USA (various studies): 35 - 95%**
- **USPHS (1960's):**
  - most thorough epid. study ever done
  - statistically representing 26M (6-17y)
  - Grainger's TPI (severity)

75% Occlusal Disharmony

25% Near-ideal Occlusion

ANGLE CALSSIFICATION (Molar Relationship)

- NORMAL 25%
- CL-I 50-55%
- CL-II 15-20%
- CL-III 1%

USPHS 1960's, age 6-17

Why early orthodontic screening?

6's erupted = Post. Occl. established

AAO Recommendations 1998

Detection of:

- Fct. habits, crowding, deep/open bites
- AP & transverse discrepancies

Benefits:

- «influence» **jaw growth**, harmonize width of arches
- improve **eruption** patterns,
- lower risk of **trauma** to protruding U inc.
- correct harmful **O. habits**
- improve **esthetics** & self-esteem
- simplify / shorten **Tx time** for later corrective phase
- reduce likelyhood of **impactions**
- improve some **speech** problems
- preserve / gain **space** for erupting perm. teeth

INCIDENCE OF PROBLEMS

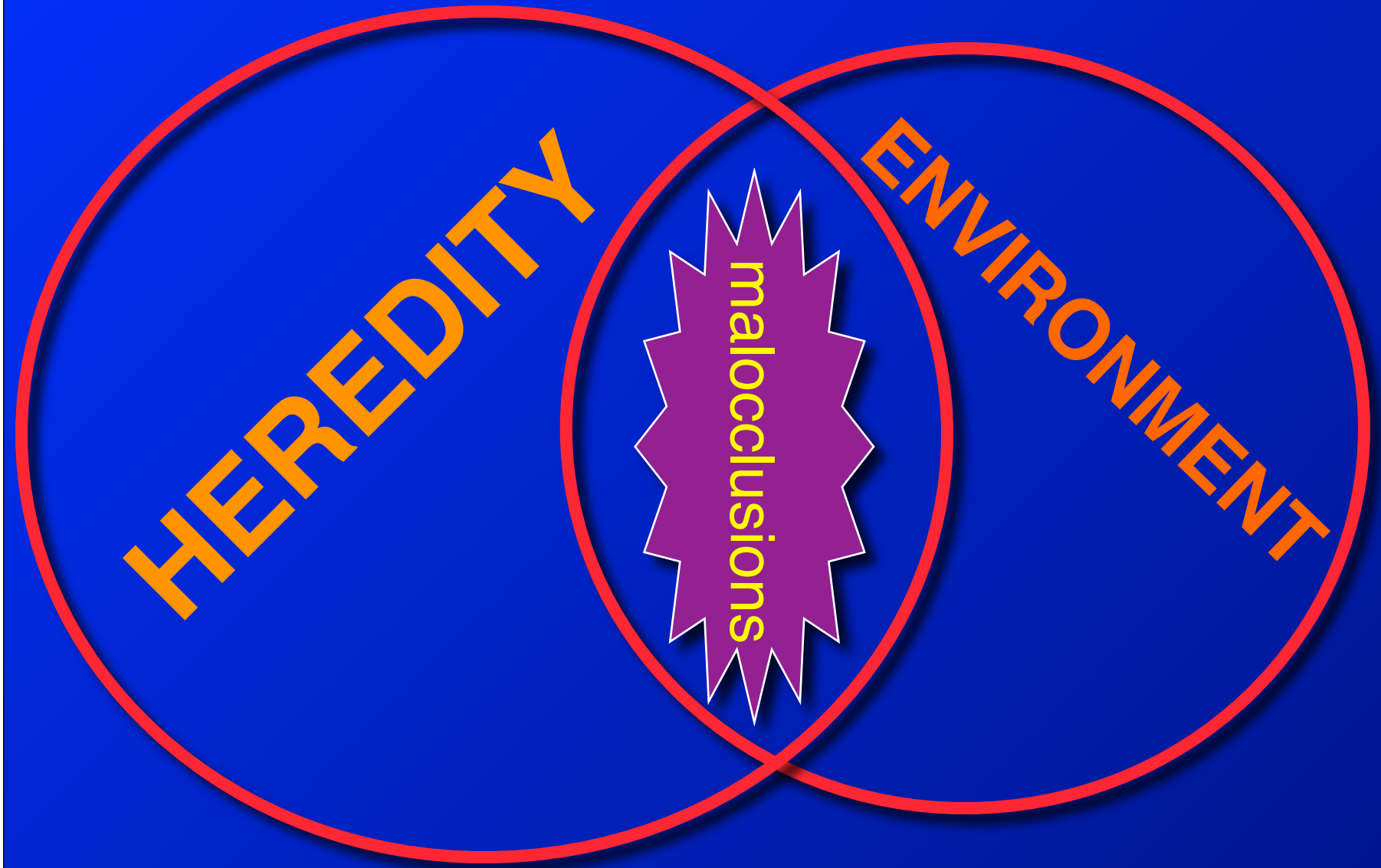
✦ CROWDING	40% (age 6-11)	85% (age 12-17)
✦ OVERJET (> 6mm)	16% (CL-II & skeletal)	
✦ CL-III MOLARS	1%	
✦ ANT. OPB (> 2mm)	1% whites	10% blacks
✦ DEEP BITE	10% whites	1% blacks
✦ POST XB (>2 teeth)	6%	

USPHS 1960's / age 6-17

ETIOLOGIC FACTORS
Classification

- **Inherited & Acquired**
- **Predisposing (direct) & Determining (indirect)** (Mc Coy 1956)
- **7 Causes & Clinical Entities** (Moyers, 1958)
  - Heredity
  - Developmental defects of unknown origin
  - Trauma (pre & post-natal)
  - Physical agents (pre & post-natal)
  - Habits (thumb , fingers, tongue, etc...)
  - Diseases (systemic, endocrine)
  - Malnutrition
- **Extrinsic (general) & Intrinsic (local)**

ETIOLOGY OF MALOCCLUSIONS



TERMINOLOGY

- **SERIAL EXTRACTIONS** (Kjellgren, 1929)
- **GUIDANCE OF ERUPTION** (Hotz, 1970)
- **GUIDANCE OF OCCLUSION**

...influence tooth eruption into a favorable occlusion...

COMPLETION OF ANTERO-POST.

MANDIBULAR GROWTH

AGE	♂	♀
9	85%	90%
13	90%	95%
15		98%
19	98%	

Wolford et Al., O. Surg., 1973 - 45:3

SERIAL EXTR. - CASE SELECTION (ideal conditions)

- NO SKELETAL DISHARMONY

  (Good facial balance / harmony)
- CL-I MOLAR RELATIONSHIP
- MINIMAL OVERBITE & OVERJET
- SEVERE SPACE DEFICIENCY

  (> 10mm / ARCH)

TYPICAL SERIAL EXTR. SEQUENCE

1- PRIM. CUSPIDS (C's)

-relieves inc. crowding

2- PRIM. 1st MOLARS (D's)

-accelerates 4's eruption

3- 1st PREMOLARS (4's)

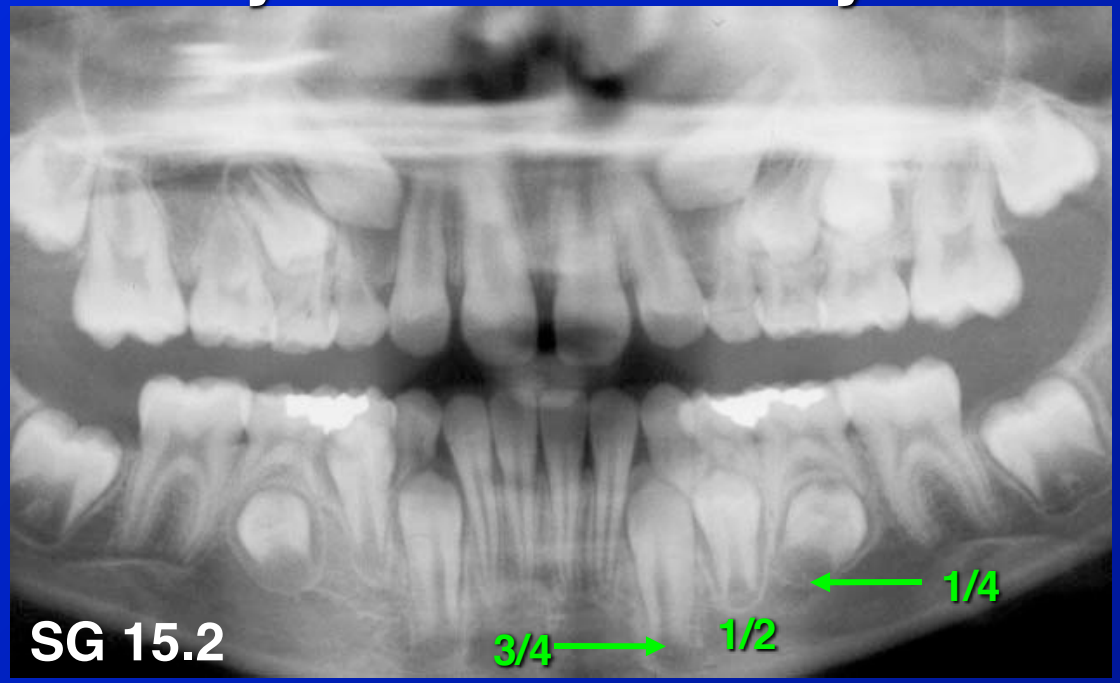
-provides room for 3's eruption

4- MECHANOTHERAPY

ROOT FORMATION *vs* ERUPTION
(Longitudinal Studies, Moorrees et Al., 1963)

- ROOT 1/2 → STANDS STILL
- ROOT 3/4 → EMERGES into O.C.

	ROOT 1/4 → 1/2		ROOT 1/2 → 3/4	
3's	2. 5 years	+	1.5 years	= 4y
4's	1.75 years	+	1.5 years	= 3.25 y



SG 15.2

ALTERNATE S. EXTR. SEQUENCE

1- **D's** (keep the cuspids)

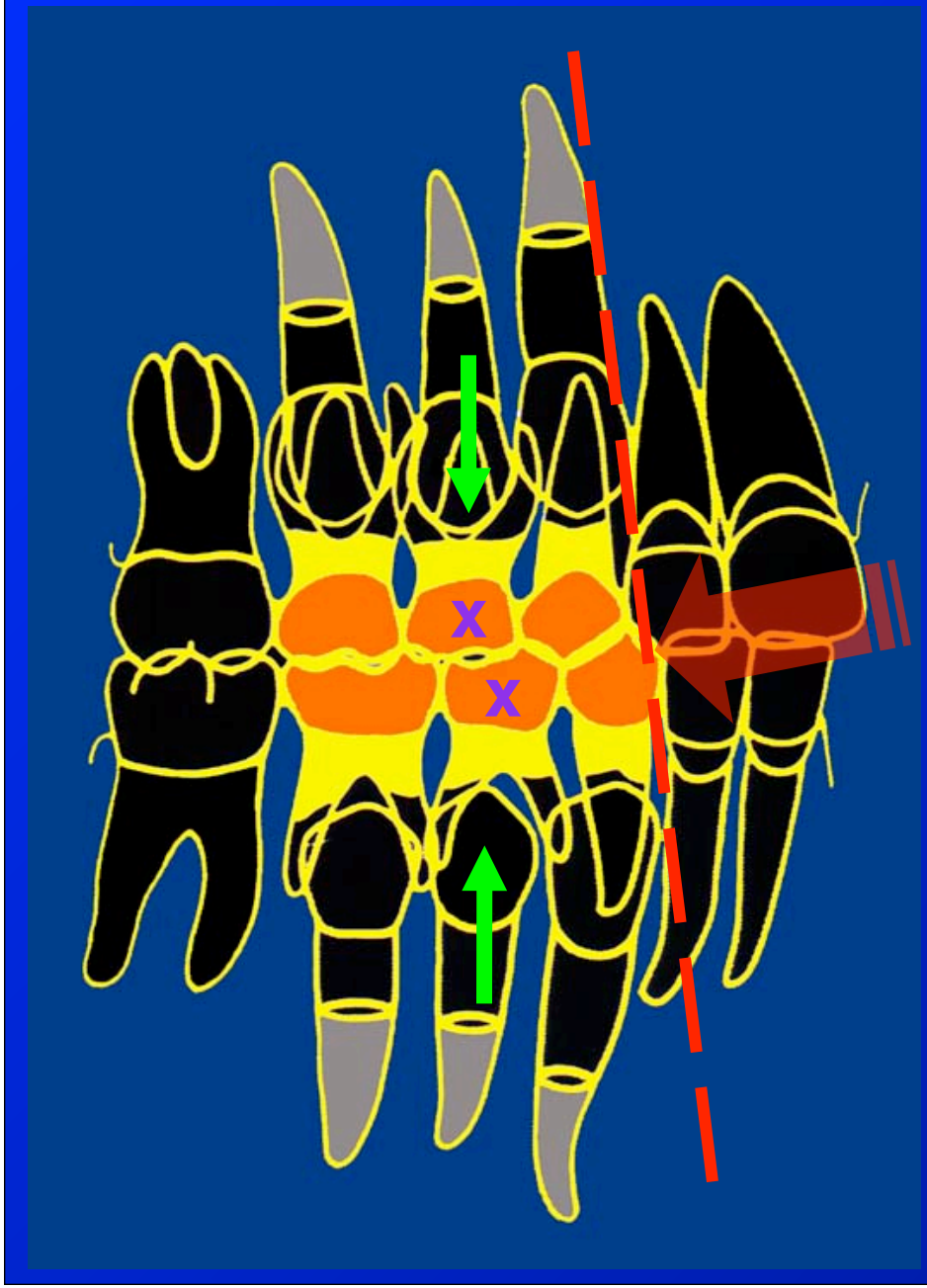
- Avoids Li tipping of incisors
- Prevents bite deepening
- Accelerates eruptionn of 4's

2- **4's & REMAINING PRIM. CUSPIDS**

- makes room for 3's

3- **MECHANOTHERAPY (fixed appliances)**

Serial Extractions - Alternate Sequence



Indications:

-Dentoalveolar protrusion
-Minimal incisor crowding
-3's & 4's at same level
-Extr. **D's** to accelerate **4's**
-Keep the **C's**

SERIAL EXTRACTIONS CONCLUSIONS

- No cookbook approaches...
- Not a licence for no supervision
- Take pan-Xr, evaluate space
- Have specific Tx objectives
  - Explain them to parents & patient

    (Phase-II & mechanotherapy usually indicated)
  - Short & Long term goals
  - Esp. when extracting permanent teeth
- When in doubt, DON'T take them out…

CONGENITALLY MISSING TEETH
(% POPULATION)

U & L 8's	20-30%
U 2's	1.5%
L 5's	1%
U 5's	0.5%
L 1+2+3+4's	0.5%

AAO ORTHODONTIC DIALOGUE - Summer 1989: 4