3 Small Screws

Chris Chang, DDS, PhD., ABO, Angle Midwest
Beethoven Orthodontic Center, Taiwan

10:45~11:15

Conflict of interest statement:
I am the President of the company that develops and manufactures the screws used in this research.

3 small Screws
that dramatically simplify my practice

1. BS Screws
2. Ramus Screws
3. IZC Screws

The Indiana University Institutional Review Board approved the protocol, assigning the number 1408974880.
He was told that **only surgery** could solve his problem.

Neither **surgery nor extraction**
Neither surgery nor extraction

People say, it seems photoshopped.

Whole Arch distalization w BS Screw

BS: Buccal Shelf

Chris, one case doesn’t mean anything!

A step further

17 skeletal C III cases w BS screws
The most general state of stress is illustrated for 3 faces of the cube. Equilibrium dictates that some stresses are positive. The shear stresses are generally written as shear stresses equal 0. That orientation is the principal direction (x, y, z). Principal stresses are then principal stresses, normal stresses. It is possible to calculate an orientation of the imaginary cube where all stresses are normal. The most tensile (least compressive) of the 3 normal stresses is indicated by the direction of the component. Thus, the normal stresses become the normal force, and the shear forces are shown in tension (t_x, t_y, t_z) to be consistent with experimental or clinical data.

In these studies, Paydar et al., Renda in creating this interactive biomechanics program, and Jing et al. (2013) showed FEA, for the expression of root resorption. Mechanical properties of the human mandible, originally published in black and white, are illustrated. See text for details.

With the latter method, there is evidence that the supporting tissues is unknown. Measuring moments in humans.

Indeterminate mechanics, an elastomeric chain anchored with mandibular buccal shelf bone screws, may be effective, but it can (and often must be) stubborn with regard to take advantage of determinate systems for engineering. A skeletal Class III malocclusion was conservatively treated from mandibular buccal shelf bone screws. The expression of root resorption may be illustrated. The critical factor in forecasting reactions (formation and resorption) in the periodontal ligament (PDL) is uncertain, unless all boundary conditions are controlled. Frost's mechanostat describes the relationship of the periodontal ligament (PDL) to the tooth and its supporting bone is a stress riser with a relative cantilever limitation for calculating stress in the PDL. In rodents, stress greater than 8 to 10 kPa is necessary for bone remodeling to occur. A skeletal Class III malocclusion, (2) bone screws, and (3) flexible copper-nickel-titanium archwires were used in the mandibular arch while it was rotating the entire mandibular arch by applying statically determinate mechanics to retract the incisors reversed the etiology of the developing anchorage. The mandibular buccal shelf bone screws of December 2015 occlusion, and the open bite (1) (CRo) and the internal symphysis. The initial mandibular buccal shelf bone screws Fig 11 were retracted with posterior anchorage (C15/C0 1) (CRo) with the latter method, there is evidence that the supporting tissues is unknown. Measuring moments in humans. The most tensile (least compressive) of the 3 normal stresses is indicated by the direction of the component. Thus, the normal stresses become the normal force, and the shear forces are shown in tension (t_x, t_y, t_z) to be consistent with experimental or clinical data. In these studies, Paydar et al., Renda in creating this interactive biomechanics program, and Jing et al. (2013) showed FEA, for the expression of root resorption. Mechanical properties of the human mandible, originally published in black and white, are illustrated. See text for details.

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10 months ago, she was told by **4** Drs. that **only surgery** could solve her problem.

No band, no surgery, no extraction

This was 2011.

**Why is that so special?**

This was 2011.

**Severe Post. Buccal X-bite**

33y6m

This was 2011.
The lower tied together with stainless steel ligature sectioned distally to the canines and all prior to debond, the upper archwire was maxillary left central incisor for dental.

**Fig 17.**

Ready for publication  AJODO ? AO ?

**Worksheet 2.** The major CRE discrepancy Evaluation (CRE) score was 23 points (Fig. 12). The ABO Cast-Radiograph profiles in CR are orthognathic, and these CR profile. The majority of pseudo Class III malocclusion. The treatment of Class III malocclusion is...
Fig. 7: Pre-treatment CBCT imaging reveals the unfavorable location of the impacted incisor.

Fig. 12: A 2x12mm OrthoBoneScrew® with a rectangular hole was inserted in the mandibular left buccal shelf, and a power archwire was bonded. Note that the lateral incisor was not bonded.

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Free IJOI hard copies at ORMCO/Newton’s A Booth

Amazing Dilacerated Impaction

17 mm

OMG!

1. Remove all
2. Two implants

Failure Rate for Buccal Shelf Screws

1680 BS Screws

7%

Free IJOI hard copies at ORMCO/Newton’s A Booth
Interradicular (I-R) miniscrews are the most common

Failure rate for Md screws

![Failure rate chart](Chang C, AO, 2015 Dr. Park, YC, PCSO, 2004)

7% 19%

BS MI

Materials and Methods:

suggests that a small fraction of patients (1.9%) are predisposed to failure with this method. (Left side (9.29%) failures was significantly greater (6)

Overall, 121 miniscrews out of 1680 (7.2%) failed: 7.31% were in MM and 6.85% were in AG.

6 The mandibular retraction of other sites have found no significant relationship

Failure rate in the mandible (19.3%) than in the maxilla

Additional study of the sample is indicated to deter-

mination to failure in a small portion of the patients (16/

Regarding side of patient, 78/121 (64.5%) of the

patients were in MM, because oral hygiene is facilitated to

MBS miniscrews were installed in a consecutive

5 years), inserted in private practice by the same

skilled clinician (indicated by the identical screw size and

type). The patients were followed for 3 to 5 years, and

time of failure was 3.3 months. In the MM group, 94 out

of 121 (77.9%) failed; in the AG, 27 out of 34 (79.4%)

were instructed in oral hygiene procedures to control

force varied from 8 oz–14 oz (227 g–397 g, 231–

6 mm above the level of the soft tissue (Figure 5) and

endosseous portion had approximately 5 mm of

screw insertion point may penetrate AG or MM but the

screws involved only 105 patients: 89 patients had

Most studies of I-R miniscrews have shown a higher

failures than expected in the mandible (19.3%)

than in the maxilla (4.9%).

extra-alveolar approach). The

nearly parallel as possible to the mandibular first and

second molar roots (extra-alveolar approach). The

MBS miniscrews must be posi-

tioned precisely relative to tooth roots, soft tissue,

mandibular arch, MBS miniscrews must be posi-

tioned precisely relative to tooth roots, soft tissue,

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The Angle Orthodontist, Nov. 2015

MANAGEMENT OF IMPACTIONS

3 small Screws

that dramatically simplify my practice

1. BS Screws

2. Ramus Screws

3. IZC Screws

How to fix this impaction?
Your Tx Plan?

30 min for removing 3rd molar + Bonding + Screwing

18y10m

4 months later…

Next step?

Poor OH

3 min

18y10m

Next step?

2016.07.30

Next step?

2016.07.30
Weapon does matter!

Total Time = 30 + 3 + 3 = 36 min

3 visits & 5 months and 2 days

Screw does matter!
How?

Back to Anatomy

The chance to push human race forward.

Dr. Case

Buccal Shelf Screw
(2x12 SS)

Ramus Screw
(2x14 SS)

Why 14 mm?

Ramus Screw
(2x14 SS)

Why 14 mm?
Covered with thick Medial Pterygoid M.

Ramus Screw: 2x14 SS

Why 14 mm?

Thick soft tissue

Ramus Screw: 2x14 SS

Make a dent on BONE w an explorer

Ramus Screw: 2x14 SS

Jobs’ 3 levels of Pro.

1. Simple solution from simple thinking
2. Complex solution from deep thinking
3. Simple solution from insanely deep thinking

Real Pro.

What is the Failure Rate for Ramus Screws?

From 2013~15 (4 months observation)

Failure Rate of Ramus Screws

5%
IJOI 41  RE6EAR&+ 3RE9IE:
Fig. 10: A series eleven drawings illustrates the details for ramus screw placement. a. an occlusal semitransparent view illustrates the position for a horizontally impacted molar. b. a similar drawing shows the position of the ramus screw superior to the impaction. See text for details.

A series eleven drawings illustrates the details for ramus screw placement. a. an occlusal semitransparent view illustrates the position for a horizontally impacted molar. b. a similar drawing shows the position of the ramus screw superior to the impaction. See text for details.

The horizontally impacted second molar was uprighted with 4 months of traction, and a routine molar tube was bonded one month later. See text for details.

Key words:

The horizontally impacted second molar was uprighted with 4 months of traction, and a routine molar tube was bonded one month later. See text for details.

3 small Screws that dramatically simplify my practice
1. BS Screws
2. Ramus Screws
3. IZC Screws
Chris, please wash your brain.

IZC Screw: Outside the roots

Learn from the PRO!

IZC: Infra-Zygomatic Crest

IZC miniscrew

Zygomatic process

Infra Zygomatic Crest

Infra Zygomatic Crest
IZC Screws for Mx arch distalization

Extra-Alveolar Insertion

Occlusion

IZC Screws

Class III

Class I

Full cusp C II w 14 mm OJ

Ethen 15y7m

Infra

Zygomatic

rest

MGJ

> 5 mm

1 point/mm

4 points 2 points 0 point

4 points 2 points 0 point

4 points 2 points 0 point

1 point/mm

0 point
Full cusp C II w 14 mm OJ

CII correction
IZC Screws + CII elastics + Bite Turbo

CII correction
IZC Screws + CII elastics + Bite Turbo

CII correction
IZC Screws + CII elastics + Bite Turbo

Early IZC screw insertion (1st month) is the KEY.

Early IZC screw insertion (1st month) is the KEY.
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<tbody>
<tr>
<td></td>
<td>Pre-Tx</td>
<td>Post-Tx</td>
<td>Diff</td>
</tr>
<tr>
<td>1.  SNA (82°)</td>
<td>84.5°</td>
<td>84°</td>
<td>0.5</td>
</tr>
<tr>
<td>2.  SNB (80°)</td>
<td>80.5°</td>
<td>80°</td>
<td>0.5</td>
</tr>
<tr>
<td>3.  ANB (2)</td>
<td>4°</td>
<td>4°</td>
<td>0</td>
</tr>
<tr>
<td>4.  SN-MP (22°)</td>
<td>28°</td>
<td>28°</td>
<td>0</td>
</tr>
<tr>
<td>5.  FMA (2°)</td>
<td>2°</td>
<td>2°</td>
<td>0</td>
</tr>
<tr>
<td>6.  U1→NA (4mm)</td>
<td>12 mm</td>
<td>3 mm</td>
<td>9</td>
</tr>
<tr>
<td>7.  U1→SN (104°)</td>
<td>128°</td>
<td>99°</td>
<td>29</td>
</tr>
<tr>
<td>8.  L1→NB (4mm)</td>
<td>4 mm</td>
<td>8 mm</td>
<td>2</td>
</tr>
<tr>
<td>9.  L1→MP (90°)</td>
<td>96°</td>
<td>101°</td>
<td>5</td>
</tr>
<tr>
<td>10. LL→E-line (-1mm)</td>
<td>4 mm</td>
<td>2 mm</td>
<td>2</td>
</tr>
<tr>
<td>11. LL→E-line (0 mm)</td>
<td>5 mm</td>
<td>2 mm</td>
<td>3</td>
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OJ = 14 mm
How to retract the whole Mx dentition in such a huge scale with only 2 IZC screws?

Dr. Rungsi

OJ =14 mm

IZC = Infra Zygomatic Crest

IZC Placement

Inter-radicular Placement
Outside the roots

In-between the roots

Easy to adjust the position of PC

Gingival irritation caused by impinged Power Chain.

IZC Screws for Mx arch distalization

What else?

1. Mx arch distalization
2. Molar intrusion
3. Molar mesialization
4. Impaction or transposition
1. **Mx arch distalization**
2. Molar intrusion
3. Molar mesialization
4. Impaction or transposition

4 major applications of IZC screws
1. Mx arch distalization
2. Molar intrusion
3. Molar mesialization
4. Impaction or transposition

IZC screw + 3D lever arm

Transposition

Open coil spring (to create space)

T-loop for retraction (19x25 TMA)

Screw w square hole (Anchorage: 2x14H)

Power chain to S. (prevent flaring)

Don’t bond lateral (free body)

Stop (mesial to crowding)
2 KEYS to solve the transposed teeth:

1. Don’t bond the lateral
2. Keep the transposed tooth as high as possible

Yu Hsu, Chang, and Roberts

Consistent with the treatment objectives, the most desirable choice. After carefully considering all the possibilities and root angulations, and (5) improve facial esthetics.

Fig 5

Table.

ANB (°) 4
SNB (°) 7
U1 to NA (mm) 5
/C14
/C15

Fig 8.

3 mm Screws that dramatically simplify my practice

1. BS Screws
2. Ramus Screws
3. IZC Screws

The Indiana University Institutional Review Board approved the protocol, assigning the number 160717021.
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Why SS?

Ti vs SS

What's the failure rate?
386 patients

IZC screws
Randomized Double Blind Clinical Trial

Materials & Methods
386 patients

Only Mx arch distalization

Only one Dr.
only one technique

386 patients
Chris, can I do it?
Believe me when I say it - believe me!!! Trumpology P220

Believe me, it is EASY!
IZC: 2 X 12 mm SS (outside the roots)

Believe me, it is EASY!
IZC: 2 X 12 mm SS (outside the roots)

Summary
Total failure rate for IZC screws: 6.3%
SS (7%) > Ti (5.7%)
But Not Statistically Significant

386 patients

Summary
386 patients
Conclusion

**Figure 2:** A 2x12-mm miniscrew is designed to be inserted in the infra-zygomatic crest (IZC) with a self-drilling technique.

**Figure 3:** Each screw was positioned at least 5-mm superior to the level of the soft tissue (Figs. 1 and 3). To prevent postsurgical infection, the head of each screw was positioned at least 5-mm superior to the soft tissue to enhance oral hygiene and control soft tissue irritation, the head of each screw was positioned at least 5-mm superior to the soft tissue (Figs. 1 and 3).

**Conclusion:**

Ti, SS miniscrews had a significantly (p<.05) higher failure rate when placed in IZC (7.4%) and on the right side (7.9%). Failures were unilateral in 21 patients (5.4%) and bilateral in 14 patients (3.6%). Failures were defined as any miniscrew that failed to provide continuous anchorage.

The 1.3% difference between SS and Ti failures was not statistically significant (p=.07). Failures were unilateral in 21 patients (5.4%) and bilateral in 14 patients (3.6%). Failures were defined as any miniscrew that failed to provide continuous anchorage.

Retrospectively, the soft tissue type was scored relative to the mucogingival junction (MGJ). All miniscrews were immediately drawn, and then placed in the right or left side as specified (double blind, split mouth design). Miniscrews were placed by the same clinician and monitored by the same coordinator. The force ranged from 8-oz to 14-oz (227–397g, 223–389 cN) depending on the force.

The hypothesis was that SS miniscrews will have a higher failure rate. A total sample of 386 consecutive patients was composed of 76 males and 310 females with a mean age 24.3 yr, range 10 to 59 yr. Each subject was recruited from a patient pool, previously treatment-planned for supplemental anchorage with bilateral IZC miniscrews (OrthoBoneScrew®) to the alveolar process, on the buccal surface of the upper incisors, 10-59 yr). All the screws were placed by the same clinician and monitored by the same coordinator. The force ranged from 8-oz to 14-oz (227–397g, 223–389 cN) depending on the force.

The 1.3% difference between SS and Ti at some sites was not clinically significant. Since SS is less prone to screw fracture and tends to hold a sharper edge at the tip, it continues to be the preferred material for self-drilling miniscrews. Several clinical studies have shown a failure rate of less than 5% for SS miniscrews. Ti alloy and SS (Fig. 2). Both types of IZC miniscrews compare the failure rate for miniscrews made with biocompatible materials for constructing orthopedic devices, and both Ti and Ti alloy are osseointegrated implants. TADs are not usually loaded with pre-stretched elastomeric modules.

How to fix this Gummy Smile? Screw alone can fix it.
Only Screw!

No OGS Screw alone can fix it.

WOW

No OGS Screw alone can fix it.

Huge

The secret is Mechanics

Chris Chang Ortho

1.5 X 8 mm SS
2 X 12 mm SS

Mx Impaction & Retraction

Mx Impaction & Retraction
Classification of altered passive eruption is important for determining the most appropriate surgical procedure(s) to correct it.

Fig. 13: Diagrams and illustrations demonstrating the use of IZC miniscrews to correct maxillary anterior segmental discrepancy. The IZC miniscrews close upper space but also provide lingual crown torque to the upper incisors.

Fig. 16: Photographs showing the pre-treatment condition of the maxilla (red dot with a cross).

Fig. 17: Illustration of the biologic width of the normal dento-gingival complex. Normal widths are approximately 3.0 mm buccally and lingually, with a mean of 4.5 to 5.0 mm interproximally.

Fig. 18: Diagrams showing the use of archwires to expand the arch and create space for erupting incisors. The archwire was expanded toward crossbite, so the archwire was expanded.

Fig. 19: Photographs showing the post-treatment condition of the maxillary incisors, with improved crown-root ratio and reduced overjet.

Fig. 20: Photographs showing the Cast-Radiograph of the maxillary incisors before and after treatment, demonstrating the improvement in the crown-root ratio and overjet.

Key words: maxillary anterior segment. 32 months of interdisciplinary treatment resulted in a near ideal result as evidenced by a Cast-Radiograph. Four premolars were extracted to correct protrusion, and skeletal anchorage via four miniscrews (2 anterior and 2 posterior) to intrude the maxillary incisors. Following orthodontics, surgical crown lengthening was performed in the extraction of four premolars to correct protrusion, and skeletal anchorage via four miniscrews (2 anterior and 2 posterior) to intrude the maxillary incisors.

Treatments rendered at age 10. The Discrepancy index (DI) for this severe malocclusion was 21. Orthodontic treatment involved the use of 0.022" 3.5 oz archwire from 1 to 2 months of treatment show the maxillary incisors with improved crown-root ratio and reduced overjet.
1. Profile | Protrusive | Straight
2. Md. angle | High | Low
3. Bite | Open | Deep
4. Ant. inclination | Flaring | Flat

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<tr>
<td>4. Ant. inclination</td>
<td>Flaring</td>
<td>Flat</td>
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<tr>
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<td>7. Pt. perception</td>
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<td>8. Etc...</td>
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**How to treat this Severe Protrusion & Gummy Smile!**

Pre-Tx | Post-Tx

No Ext. | No OGS

**No OGS: No fixation plates**

Pre-Tx | Post-Tx

No Ext. | No OGS

**No OGS: No fixation plates**
How?

The secret is:
A large scale of lingual root torque & intrusion

How?

Gummy smile correction will be discussed next year in full detail.

Thanks

Gummy smile correction will be discussed next year in full detail.