What You Can Do When CPAP Fails

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Continuous Positive Airway Pressure (CPAP)
CPAP Benefits

• Well studied, well accepted, most available
• Most common recommendation for obstructive sleep apnea
• Insurance usually covers
• Millions use it effectively
• Addresses entire breathing passageways
CPAP Negatives

- Uncomfortable
- Leaves marks
- Doesn’t work or makes worse
- Bulky, clumsy, noisy
- Embarrassment
CPAP Adherence

• 100 patients given CPAP
  • Initial acceptance: ~80% (80)
    • ~50% use at 1 year (40)
      • ~50% use > 50% of night (20)
  • ? %  3 to 5 years later?
CPAP Checklist

• Work with DME company
• CPAP vs. Bilevel vs. Auto vs. ASV
• Find comfortable mask
• Check for leaks
• Check adherence data
• At a certain point, move on
Issues to Consider

• Weight loss
• Good sleep hygiene
• Address nasal congestion
What Are Other Options?

- Mainstream medical options
- Oral appliances
- Surgery
What Are Other Options?

• Newer/alternative
  • Oral exercises
  • Didgeridoo
  • Acupuncture
  • Provent
  • Functional dental appliances?
Dental Appliances
Dental Appliances

- Dentists that specialize in sleep apnea
- American Academy of Dental Sleep Medicine
- IHateCPAP.com
Dental Appliances

- In general, better tolerated
- American Academy of Sleep Medicine recommends oral appliances and CPAP as first line options for mild to moderate OSA
Access Issues

- Sleep physician experiences and biases
- Practitioner locations
  - Dentists, surgeons, orofacial myologists, didgeridoo instructor, acupuncturist, etc.
Dental Appliances

- Gradual advancement is key
- Salivation and soreness common
- TMJ issue
- Bite changes can occur
- Adults only (in general)
Functional Appliances

- DNA Appliance
- Homeoblock
- Bio-Block
- ALF
- Access issues
DNA Appliance

RDI from 24 to 0 in 10 months
Upper airway increased 59%

Dr. Dave Singh
Provent
Provent

- Expiratory Positive Airway Pressure (EPAP)
- 50% airflow resistance on exhalation
  - Normal inhalation
- ~53% drop in AHI
Provent

- $20 for 10 day trial pack
- ~65 for 30 days ($780/yr)
- Acceptance highly variable
Acupuncture

• Lowered AHI by 50%
• Link to original article
  • http://doctorstevenpark.com/?p=5860
Orofacial Exercises

• Drop in AHI by ~50%

• [http://ajrccm.atsjournals.org/content/179/10/962.full.pdf+html](http://ajrccm.atsjournals.org/content/179/10/962.full.pdf+html)

• [IJustWantToSleep.com](http://IJustWantToSleep.com)
Didgeridoo

- Significant improvements in AHI (48% drop), Epworth, partner ratings

### Table 2: Effects of intervention on sleep related outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Didgeridoo group</th>
<th>Control group</th>
<th>Raw difference* (95% CI)</th>
<th>Adjusted difference† (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epworth scale</strong></td>
<td></td>
<td></td>
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<tr>
<td>At 4 months</td>
<td>7.4 (2.3)</td>
<td>9.6 (6.0)</td>
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<tr>
<td>Change from baseline</td>
<td>−4.4 (3.7)</td>
<td>−1.4 (2.6)</td>
<td>−3.0 (−5.7 to −0.3), P=0.03</td>
<td>−2.8 (−5.4 to −0.2), P=0.04</td>
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<td><strong>Pittsburgh quality of sleep index</strong></td>
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<tr>
<td>At 4 months</td>
<td>4.3 (2.1)</td>
<td>5.6 (2.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change from baseline</td>
<td>−0.9 (1.6)</td>
<td>−0.2 (1.7)</td>
<td>−0.7 (−2.1 to 0.6), P=0.27</td>
<td>−0.8 (−2.3 to 0.8), P=0.30</td>
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<tr>
<td><strong>Partner rating of sleep disturbance</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>At 4 months</td>
<td>2.3 (1.4)</td>
<td>4.8 (2.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change from baseline</td>
<td>−3.4 (2.4)</td>
<td>−0.6 (1.9)</td>
<td>−2.8 (−4.7 to −0.9), P&lt;0.01</td>
<td>−2.7 (−4.2 to −1.2), P&lt;0.01</td>
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<tr>
<td><strong>Apnoea-hypopnoea index</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 4 months</td>
<td>11.6 (6.1)</td>
<td>15.4 (8.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change from baseline</td>
<td>−10.7 (7.7)</td>
<td>−4.5 (6.9)</td>
<td>−6.2 (−12.3 to −0.1), P=0.05</td>
<td>−6.6 (−13.3 to −0.1), P=0.05</td>
</tr>
</tbody>
</table>

*Two sample t tests.
†Analysis of covariance with adjustment for severity of disease (apnoea-hypopnoea index and Epworth scale) and weight change during study period.

BMJ, doi:10.1136/bmj.38705.470590.55
Surgical Options

- Consider after trying other options
- Weight loss
- Other nonsurgical options
Surgical Options

- Tracheotomy: 100% successful
Surgical Options

• Maxillo-mandibular advancement: 90-95%
• Multilevel soft tissue procedures: 60 to 80%
• UPPP only: 40%
• Nasal surgery: 10%
Surgical Options

- Uvulopalatopharyngoplasty (UPPP)
  - 40% success overall
- Complications (rare)
  - Infection
  - Bleeding
  - Persistent OSA
  - Velopharyngeal incompetence
UPPP

- UP Flap
- ZPP
- Expansion sphincter pharyngoplasty
- UP4: Uvulopalatopharyngoparkplasty
Trans-Palatal Advancement

Figure 1: Intracranal view of pharyngoplasty with palatal advancement.

Figure 2: Two methods of pharyngoplasty with palatal advancement are diagramed.
Mandibular Osteotomy with Genioglossus Advancement / Hyoid Myotomy

- 70-80% successful when combined with other procedures
Hyoid Myotomy Alone

- 50% drop in AHI
Suture Suspension

- Variable success rates: 50 to 80%
- Usually with other procedures
- Repose
- Encore
- Generic
Radiofrequency (RF) Procedures

- RF palate and tongue base stiffening
  - Using thin needles
  - Works, but not as effective long term
  - Usually need many treatments

Radiofrequency (RF) Procedures

- Tongue base resection
- Submucosal (SMILE)
- Excision/debulking

Maxillo-Mandibular Advancement
Which One Do You Choose?
Paralysis By Analysis
Steps To Take

• Have continuing conversations with your doctor
• Have time limited goals
• Don’t be afraid to fail
• Fight for what you need
• Don’t give up
Questions?

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