Nitrous oxide offers superior patient satisfaction over opioids and benzodiazepines for analgesia and anxiolysis during outpatient urological procedures

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INTRODUCTION

Nitrous oxide (N2O) has been shown to be a safe and effective anxiolytic and analgesic agent, having been used extensively for office-based procedures (e.g., in dentistry and plastic surgery) for decades. (Fig. 1) Many urology patients require office-based procedures that have significant associated pain and anxiety due to the sensitive anatomical location of procedures. Traditionally, patients have been offered medications such as benzodiazepines and opioids for these procedures. However, the CDC and FDA currently recommend against combining opioid and benzodiazepines whenever possible.1 We report superior patient satisfaction with the Pro-Nox Nitrous Oxide 50/50 mix system over opioids and benzodiazepines for control during office-based urological procedures. (Fig. 2)

METHODS

A retrospective survey was conducted on consecutive patients who utilized 50/50 N2O via the Pro-Nox system during eight different urological office-based procedures. Fifty-one patients (70%) responded. Previous procedural histories of patients were obtained. Patients were asked to assess satisfaction of using N2O over previously used non-N2O regimens by responding yes or no to the following assessment domains: overall improved experience, rate of return to normal, preference over opioid/benzo, likelihood of recommendation to other patients, likelihood of use for next procedure, and duration (<15 min and >30 min).

RESULTS

We report the most diverse series using the Pro-Nox Nitrous Oxide 50/50 mix system for pain and anxiety control during in-office urological procedures. Ninety-six percent of patients stated that N2O “helped” and 82% stated it “absolutely helped” during their procedure. Seventy-eight percent of patients rated their NO based procedure better than previous opioid-based procedures and 71% would choose N2O for future procedures. Eighty-eight percent of patients stated they would be “very likely” to recommend N2O to other patients. Patients stated the effects of the N2O lasted less than 15 minutes and less than 30 minutes in 75% and 90%, respectively. Eighty-four percent of patients said they returned to normal faster than with other analgesic medications. We had zero procedure complications, terminations, or delays with the Pro-Nox N2O system.

CONCLUSION

• N2O offers superior pain and anxiety control over benzodiazepines and opioids for office-based urology procedures, eliminating the need for these regimens in this setting.
• The Pro-Nox N2O system as a patient-controlled analgesic and anxiolytic provides excellent safety profile and fast recovery.
• Urology patients are likely to recommend use of N2O to other urology patients and are likely to seek out providers that utilize N2O for office-based urologic procedures.

REFERENCES


CONTACT

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OBJECTIVES

• Evaluate patient satisfaction of N2O use compared to opioid and benzodiazepine use for office-based procedures.
• Evaluate patient perceived duration of N2O and perceived relative time to return to normal.
• Evaluate likelihood of recommendation to other urology patients to use N2O and to seek urologists who offer N2O.

Figure 1. (A) Mechanism of N2O-induced analgesia. N2O is thought to stimulate neuronal release of endogenous opioid peptides or dynorphins (DYNs). (B) Mechanism of N2O-induced anxiolysis. N2O is thought to activate benzodiazepine (BZ) binding site leading to a cascade producing a cyclic GMP-dependent protein kinase (PKG). Both mechanisms are still largely unknown despite the long history of use of N2O.

Figure 2. Patient demonstrating use of the Pro-Nox system.

Figure 3. Assessment of patient satisfaction domains after using Pro-Nox N2O system compared to previous use of a Non-N2O Medication for Outpatient Urological Procedures

<table>
<thead>
<tr>
<th>Assessment of Patient Satisfaction Domains</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Experience</td>
<td>96%</td>
</tr>
<tr>
<td>Returned to Normal Faster</td>
<td>84%</td>
</tr>
<tr>
<td>Preferred over Opioid/Benzo</td>
<td>78%</td>
</tr>
<tr>
<td>Recommend to other patients</td>
<td>88%</td>
</tr>
<tr>
<td>Would use for next procedure</td>
<td>71%</td>
</tr>
<tr>
<td>Duration &lt;15min</td>
<td>75%</td>
</tr>
<tr>
<td>Duration &gt;30min</td>
<td>90%</td>
</tr>
</tbody>
</table>

Assessment of patient satisfaction domains after using Pro-Nox N2O system compared to previous use of a non-N2O medication for outpatient urological procedures. Data is represented by percentages of “yes” replies to each assessment domain.