The evolution of osteopathic manipulative technique: The Spencer technique

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The Spencer technique is a standardized series of shoulder treatments with broad application in diagnosis, treatment, and prognosis. The evolution of this technique is traced from 1916 to date to try to identify factors in the development of manipulative methods. Few suggestions about the basic steps to be followed in developing any new manipulative technique were seen. Of chief importance were changes in sequence, the addition of steps, and the combination of one technique with another, as in the addition of muscle-energy methods to each step. One change, accidentally introduced in the 1970s, displaced a critical step in the procedure. The principal element guiding the development of the Spencer technique appears to be clinical necessity interpreted in terms of anatomy and pathology.

(Key words: Osteopathic medicine, manipulative technique, Spencer shoulder treatment, prognosis, history, innovation)

The past 50 years have been characterized by change in medical practice, often unexpected change of great magnitude. In the osteopathic medical profession, unexpected changes have come in the form of new kinds of osteopathic manipulative technique added to our old, venerated group of diagnostic and treatment procedures. Muscle energy, strain-counterstrain, and myofascial techniques rank importantly among those unique methods that have appeared more recently on the scene.

The evolution of these new methods is of more than casual interest to osteopathic medical educators and clinicians, many of whom hope that careful study of the development of new osteopathic methods will help to define the mechanisms by which other new techniques can be generated. By establishing a model for the development of new styles of technique, we open the door for still further growth of the osteopathic medical profession.

The new methods are themselves examples of the growing incongruity between what we have been taught and what we are actually experiencing. More specifically, I call the reader’s attention to the commonly stated perception that has been carefully nurtured in one generation of osteopathic physicians after the other: There are no new osteopathic diagnostic and treatment procedures—only those that are reinvented or rediscovered.

The experience of many older osteopathic physicians tends to support that statement. Nor has the idea been lost to recent generations of practitioners. However, our experience in the last 15 or 20 years calls that sacred maxim into question. For instance, the basic ideas expressed through the application of Jones’ strain-counterstrain techniques are unlike anything we have seen in osteopathic medical practice in the past. They resemble reflex
diagnosis and therapy but their most important aspects differ.

Recent events, then, have brought to us new osteopathic diagnostic and treatment procedures that are neither rediscoveries nor re­births of old ones. This situation has raised our awareness of the historical development of older, established osteopathic methods. We have become curious about how a practicing physician identifies and develops new methods unlike any preexisting ones. We wish to learn how a physician moves from the use of standard procedures toward development of original methods. Is there a generalizable method? Is there any method at all? Could the method be used to develop still other techniques? Would such study produce other useful information?

This article explores the chronologic development of one osteopathic technique, actually a series of techniques directed at shoulder problems, which is usually called the Spencer technique. A review of the changes in the series of treatment steps over a 74-year-period provides a unique opportunity to identify factors influencing the development of a technique. Such a review may permit us to generalize about how new techniques arise, how completely new styles of structural diagnosis and management are “invented.”

Usefulness of technique
The Spencer technique is particularly useful because of its broad application in diagnosis, treatment, and prognosis. The method is rarely taught as a part of the diagnostic process for shoulder dysfunction. When used in diagnosis, the various steps of the technique will evaluate the separate ranges of motion of the shoulder both as to degree of motion before pain occurs and the total permitted range of motion. This information will also help to identify the shoulder structures in which a pathologic lesion exists.

The application of the series has not been exploited adequately by the profession. In this adaptation of the series, the total range of painfree motion permitted in each step is compared with the results of previous examinations. If the range of motion is unchanged, the short­range prognosis is guarded to poor. If it is slightly increased over a period of 4 to 6 weeks, the prognosis is somewhat better. If it increases rapidly, the prognosis is good.

The Spencer technique has additional appeal in osteopathic medical educational circles. The series is specific as to the order in which its steps are performed and exacting in the requirements for performance of each step. In recent years, the sequence of steps has become more standardized. In any of its minor variations, the Spencer technique is more teachable, learnable, and testable than many other osteopathic manipulative procedures. Unlike many osteopathic manipulative procedures included in the curriculum, the student and the instructor can both be satisfied in the educational outcome when the Spencer technique is the subject of attention. The student has confidence in knowing the correct sequence of procedures and can perform them adequately when the clinical need presents itself. The instructor is gratified because of assurance that the student is competent.

At the Ohio University College of Osteopathic Medicine, we use a competency-based evaluation of Spencer shoulder technique. This testing design provides strong evidence of the competency of the student to perform this series of shoulder tests and treatments. In the evaluation, the examiner is the patient and thus, in addition to observing the sequencing and process of each step, feels the application of forces. This “role playing” permits better evaluation of the direction and amount of force used by the student. The examiner also senses the level of the student’s self-assurance. The competency-based evaluation format is superior to other methods of practical examination used in this institution because it provides more specific information to the examiner.

Historical development of technique
In his initial description, Spencer1 pointed out that he had special success applying a series
of manipulative treatments to baseball players and others who had suffered trauma to the shoulder. He indicated that the treatment series was most effective in patients with diminished shoulder motion and pain with or without calcific infiltration demonstrated by x-ray studies. He suggested that the important pathologic conditions leading to pain and motion loss were bursitis and tenosynovitis involving any of the shoulder soft tissue structures. This suggestion was especially important to osteopathic physicians, who seemed to be the last hope of patients suffering with these vexing but nonsurgical problems.

In this initial and a later description, Spencer noted that it is almost impossible to apply this treatment “without causing moderate pain—but never extreme pain...” Additionally, and importantly, he states, “Progress is necessarily slow because stretching and not tearing is the result to be attained.”

**Spencer’s description**

In 1916, Spencer described six steps (Table). The first group of three steps dealt only with flexion, extension, and some abduction of the shoulder. Spencer pointed out that in aggravated cases the patient could tolerate little more. The second group of the series addressed limitations of abduction, adduction, and external and internal rotation of the shoulder. These latter motion restrictions tend to have an early onset after injury and tend to persist long after pain and other motion limitations have resolved.

In all steps or segments of his series, Spencer had the patient lie on the side with the shoulder to be treated uppermost. He faced the patient and placed the hand nearest the patient’s head firmly on the superior aspect of the shoulder so as to fix it on the superior part of the patient’s thorax (Figure 1). The fixed shoulder girdle provided a resistant structure against which to stretch the soft tissues bridging the glenohumeral articulation as the arm was used as a long lever. For the first two steps, the patient’s elbow was maintained in a flexed position. In step 1, the arm, extended at the elbow, was fully extended, then flexed, at the shoulder (Figure 2).

In step 2, the patient’s arm, with the elbow flexed, was abducted and moved through the widest circle possible (circumduction of the shoulder) (Figure 3).

The patient’s elbow was extended in step 3, and the arm was carried “as high in front of the patient as possible” (shoulder flexion with the elbow straight, Figure 4). Treatment in the initial care of the severely involved patient stopped here.

With reduction of swelling and pain, the final three steps were added to treatment. Step 4 was the same as step 2, that is, circumduction, except that the patient’s elbow was fully extended (Figure 5).

In step 5, the patient rested the hand of the arm being treated on the most cephalward forearm of the operator. The other hand of the operator was used to force the patient’s elbow downward toward the table, then toward the head of the table, producing, in sequence, adduction, external rotation, and flexion of the shoulder (Figure 6).

In the sixth and final step, the patient’s elbow was partially flexed with the hand placed behind the flank. That hand became a pivot when the operator grasped the patient’s elbow forcing it ventrally, carefully, against a fixed shoulder. This step introduced slight abduction and rather forceful internal rotation at the shoulder joint (Figure 7).

Then the changes began. When Spencer presented shoulder treatment at the American Osteopathic Association meeting in Toronto, Ontario, Canada, in July 1925, there were seven steps in the series. The patient and the operator remained positioned as in the 1916 series. Step 1 was essentially unchanged, although there is a note that the patient’s elbow should be flexed (this maneuver was illustrated but not stipulated in the 1916 version). Spencer also pointed out that flexion of the shoulder does little but that the extension stretches tissues (Figure 2).

Step 2 was step 3 in the 1916 version. As we saw in the original report, the positions of the hands of the operator are changed from those in step 1. The hand that formerly stabilized the shoulder girdle on the upper thorax now grasps the forearm of the patient above the wrist. The operator’s other hand holds the scapula and clavicle against the upper thorax.

(continued on page 1139)
The patient’s elbow is held in full extension and the shoulder joint is carried into full flexion (Figure 4).

Step 3 is like step 4 in the earlier description. The patient’s arm is abducted with the elbow extended and carried in full circumduction (Figure 5).

Step 4 is like step 2 in the original description.

The patient’s elbow is held in full extension and the shoulder joint is carried into full flexion (Figure 4).

Step 3 is like step 4 in the earlier description.
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*Indicates use of isometric muscle energy in each step, to increase motion range.
†Uses muscle energy technique in each step.
‡Text and photography disagree; text agrees with Spencer's description.
§Uses Nicholas' article from Osteopathic Annals.
||Holds patients' wrist between operator's medial aspect of arm and lateral aspect of thorax.

KCOM = Kirksville College of Osteopathic Medicine; CCOM = Chicago College of Osteopathic Medicine; PCOM = Philadelphia College of Osteopathic Medicine.

The patient's arm is abducted with the elbow flexed and again carried in full circumduction (*Figure 3*).

Step 5 is like step 5 in the earlier report.

The patient's shoulder is adducted, flexed, and externally rotated (*Figure 6*).

Step 6 is the same as the sixth and final step of the original series. It involves slight
arm is slowly and intermittently moved into and out of a vertical (abducted) position (Figure 8).

Changes by others
St Clair was a classmate and close friend of Spencer's. In his version of Spencer's series, he includes five steps, all of which are similar to those described by Spencer, but in a different order (Table). Rubenstein included only three of the Spencer series of seven steps in his 1949 book (Table).

The current "seven steps of Spencer" appeared as early as 1953 in mimeographed class notes used by Lyman in his course in appendicular techniques for second-year students at the Philadelphia College of Osteopathic Medicine. This is the last time we find step 5 requiring adduction and external rotation. From 1974 to date, step 5 has been described first by Nicholas, then by Greenman, and by DiGiovanna and Schiowitz as producing, basically, abduction and internal rotation at the shoulder (Figure 9 and Table).

The Kirksville College of Osteopathic Medicine included a description of Spencer technique (à la Nicholas) in the Outline of Osteopathic Manipulative Procedures (1979). Nicholas' paper from Osteopathic Annals was included in Selected Papers in Osteopathic Medicine distributed for student reading at the Chicago College of Osteopathic Medicine in 1985 to 1986.

An important historical note in the Nicholas article in Osteopathic Annals may explain why we find Spencer's technique mentioned shoulder abduction with internal rotation (Figure 7).

Step 7 is a new addition in which the elbow of the patient is flexed over the operator's arm nearest the patient's head. The operator then grasps the patient's arm above the elbow with both hands and places the patient's forearm against the operator's chest. The operator leans back, maintaining constant traction on the shoulder joint at the same time the patient's arm is slowly and intermittently moved into and out of a vertical (abducted) position (Figure 8).
in publications at the Philadelphia College of Osteopathic Medicine earlier than at other schools. He stated, “The ‘Spencer Techniques’ were reintroduced to the osteopathic profession by Angus G. Cathie, D.O., F.A.A.O., at the Philadelphia College of Osteopathic Medicine.” This statement could account for the technique’s reintroduction after a hiatus of more than 20 years.

Cathie studied osteopathic as well as anatomic aspects of the shoulder extensively. It would be interesting to know more specifically how he was led to Spencer’s work. One must assume that Cathie found it in an osteopathic medical literature search for information relative to the shoulder. Is it possible he ran across Downing’s reference to Spencer in relation to lymph fluid drainage? Or was it St Clair’s book? Cathie in 1950 refers to the applicability of Spencer technique in treating acute shoulder pain and motion loss.

Because the description by Nicholas is the principal one in current osteopathic medical texts, we will document his rendition of the technique series. His description is the same as that published by Spencer in 1926 with several minor exceptions, and one important one. Nicholas’ procedure is reported as follows:

**Step 1.** The patient’s elbow is flexed, and the arm is carried in the horizontal plane into flexion and extension, especially extension.

**Step 2.** The patient’s elbow is extended, and the arm is carried into full flexion in the horizontal plane so that the patient’s arm lies over the ear.

**Step 3.** The patient’s elbow is flexed, and the arm/shoulder is abducted to a right angle with the body. The elbow is carried in circles clockwise and counterclockwise so that first it makes small circles, then larger ones.

**Step 4.** With the patient’s elbow extended, step 3 is repeated.

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**Figure 3.** Spencer’s 1916 series step 2: Operator flexes patient’s elbow and abducts shoulder with circumduction. (Step 4 in Spencer’s 1926 series.)

**Figure 4.** Spencer’s 1916 series step 3: Operator extends patient’s elbow and flexes shoulder. (Step 2 in Spencer’s 1926 series.)
**Step 5.** The patient’s elbow is flexed, so that the hand rests on the operator’s arm holding the shoulder of the patient. *With gentle upward pressure exerted on the patient’s elbow, the physician swings toward the patient’s head balancing weight from one foot to the other to get an easy rhythmic swing backward and forward.* [italics added] This maneuver is a marked alteration of Spencer’s step 5, with abduction and internal rotation (Figure 9) replacing the adduction and external rotation stretching (Figure 6), which are applied nowhere else in the treatment series (Table).

**Step 6.** The patient’s elbow is flexed, the hand is placed just in back of the lower ribs, and the shoulder is abducted. The operator with one hand draws the shoulder forward against the resistance of the other hand on the front of the shoulder.

**Step 7.** The photograph Nicholas used and his text disagree. In the photograph, the patient’s hand and wrist are placed on the shoulder of the operator (Figure 10), but the text describes the position the same as Spencer did in 1926, with the flexed elbow of the patient resting over the forearm of the operator (Figure 8). Nicholas’ version requires the use of both the operator’s hands to induce alternating traction and compression on the shoulder soft tissues in place of the traction and intermittent abduction described by Spencer.

The description by Greenman is much the same as that by Nicholas with the following exception: In step 1, Greenman gives equal importance to shoulder flexion and extension whereas both Spencer and Nicholas indicate the critical importance of stretching in extension. DiGiovanna and Schiowitz give the same description of the technique given by Nicholas.

Recently, an important addition to the Spencer series of techniques has found universal acceptance. Colleges
of osteopathic medicine are currently adding isotonic muscle energy treatment to each step of the Spencer series. This treatment combines Spencer’s positioning sequence and its slow, intermittent stretching with patient active muscle energy technique. Clinically, we find that the combination of the two methods enhances both soft tissue stretching and fluid movement in the area being treated. This enhancement clearly adds to the effectiveness of treatment of the shoulder.

Discussion

What do these descriptions tell us about the evolution of osteopathic manipulative technique? Clearly, we can identify the major and minor modifications made by Spencer over a 10-year period. It appears that some changes correct inadequacies identified in the original procedure.

St Clair’s3 version of the technique series developed by his friend is different in important ways. St Clair seems to be less convinced of the necessity to gain flexion/extension and abduction/adduction before attacking restrictions in internal/external rotation.

A major alteration in the technique series is found in Nicholas’ description in 1974. In that version, instead of forcing the elbow downward, creating adduction and external rotation, the elbow is raised away from the table, thus inducing some abduction and internal rotation at the shoulder. It is difficult to be certain whether Nicholas’1 change in step 5 represents an improvement or an error of interpretation. Study of the whole series suggests that abduction and internal rotation are dealt with in other steps of this series but that adduction and external rotation are not accounted for in any step except this one, as specified by Spencer. Treatment of external rotation restriction would otherwise be absent. Personal discussion with Nicholas revealed to me no special reason for making his change in step 5.
Minor changes appear in the alteration of sequence of steps. Realignment of the steps provides a more efficient sequence of manipulative techniques. For instance, flexion and extension in the horizontal plane now follow each other as do circumduction, first with the elbow extended, then flexed. The current sequence addresses shoulder joint motion in a pattern that treats the freest, most painfree motions first. That is to say, the motions that usually are best preserved are dealt with first (shoulder flexion/extension). Those motions that usually are more severely restricted earlier in the process and likely to persist the longest, internal and external rotation, are last to be treated in this series. Spencer’s thinking appears to have been that improvement in the less involved ranges of motion has, coupled with it, increases in other more severely limited ranges of motion. The development of the series depends, to a great degree, on observations of clinical response combined with applied knowledge of anatomy and pathology.

The recent superimposition of muscle energy technique on the Spencer series has greatly enhanced its effectiveness. In each step, muscle energy forces are applied after the parts have been moved against the restrictive barrier. The end result is that the patient has more motion with less pain sooner. This addition to the technique increases all ranges of motion by direct influence on the shoulder soft tissue components and perhaps through neural connections.

Other major modifications have consisted of addition of steps. For example, by 1926 Spencer had altered and added steps to his first iteration. He has added a seventh step in which traction and abduction are combined. This addition seems to be a direct response to his early statement that the whole shoulder treatment series is aimed at pumping fluids and stretching tissues.
Comment
Do we learn anything about new developing osteopathic manipulative techniques from our study this far? Perhaps. We see that Spencer continued to add steps, and to change the sequence, as he compared the clinical results and read his anatomy books. His addition of the seventh step to stretch tissues and pump fluids indicates his increased understanding of shoulder function and dysfunction. His change in sequence of steps made application of the treatment more efficient. The operator is required to make fewer changes in body or hand position.

The need for better ways of treating shoulder problems apparently was the initial impetus for Spencer’s effort. His intimate association with professional baseball players must have been an important factor underlying this interest. His initial success, and the improved results rising from subsequent changes and additions, must have spurred him on to develop the subsequent steps. Perhaps he attempted to develop other methods, but we find no record that he did.

The addition of muscle energy methods to each step of the Spencer technique was a logical one. If it lacked total originality, it demonstrated ingenuity in combining treatment forms. Both osteopathic manipulative techniques are of the so-called direct form (moving the parts “against the barrier to motion”) and are well suited to use in combination. This is not a new technique, but it is an innovative, and effective, combination.

Perhaps a negative effect on the development of this technique series is seen in the apparent misinterpretation of the fifth step. That step, as recorded by Nicholas and others, produces internal rotation and abduction. However, the sixth step is already designed to serve that purpose and is much more effective. Furthermore, external rotation and abduction of the shoulder structures should not go unattended. These vital motion limitations represent the long-lasting residua of shoulder injuries, which must be normalized if the recovery of total shoulder motion in all ranges is to be achieved. Therefore, the fifth step, as originally described by Spencer, should be used to ensure restoration of external rotation of the injured shoulder.

Conclusion
We find meager information about technique design in our study of the development of the Spencer series of shoulder techniques. We see that he combined basic science knowledge with clinical experience in the original design and subsequent improvement of the steps in the procedure.

Use of the steps for diagnosis is barely suggested but is implied throughout Spencer’s descriptions. He said little about the value of the series in prognosis.

The superimposition of muscle energy technique on this method is a laudable improvement. Although the technique is not a totally new method, it is a marked improvement on the Spencer series.

The principal lesson to be learned from this study is that clinical need and basic science knowledge are two driving forces leading to the development, improvement, and regular use of new osteopathic diagnostic and treatment methods.

References